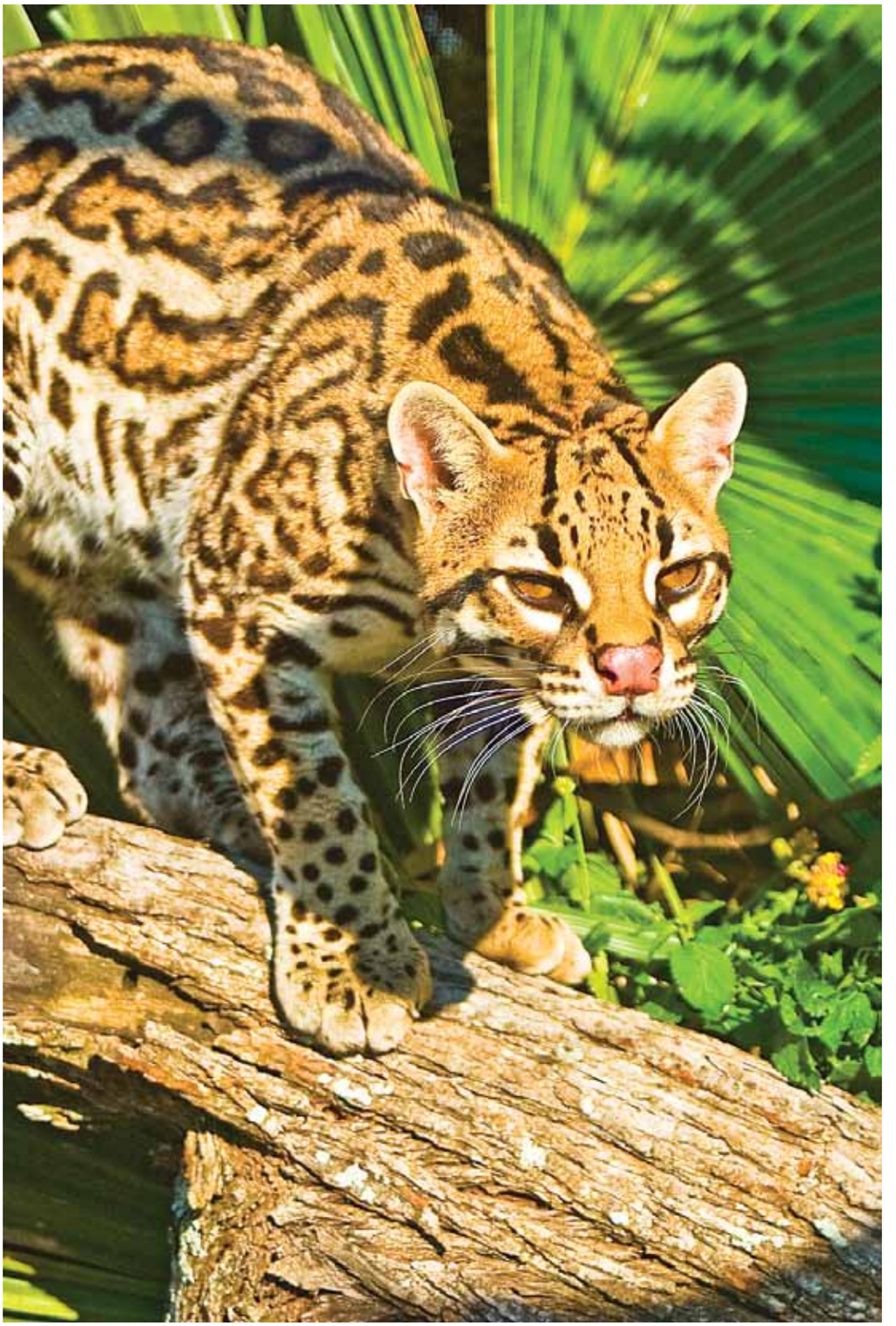
U.S. Fish & Wildlife Service

Laguna Atascosa National Wildlife Refuge

Draft Comprehensive Conservation Plan and Environmental Assessment



United States Department of the Interior

FISH AND WILDLIFE SERVICE
P.O. Box 1306
Albuquerque, New Mexico 87103

Dear Reader:

Enclosed is the Draft Comprehensive Conservation Plan and Environmental Assessment for the Laguna Atascosa National Wildlife Refuge. The Plan identifies the role that this refuge will play in support of the mission of the National Wildlife Refuge System. The final version of this Plan will guide management of the Refuge for the next 15 years.

The Plan has been sent to you because public involvement in the planning process is essential for development of an effective plan. Please review and provide comment on the plan's contents by **4:30 p.m. (Mountain Standard Time), Friday, February 12, 2010**. Comments should be specific, addressing merits of the alternatives and adequacy of the environmental analysis. We will consider your comments as we prepare the Final Plan.

All public comments received, including respondent names and addresses will be included in the planning record which will be available for public review. If you, as an individual, wish us to withhold your name or address, state this prominently at the beginning of your comments. We will honor your request to the extent allowed by law. All comments from organizations, businesses, and from individuals identifying themselves as representative or officials of organizations and businesses, will be available for public inspection. Anonymous comments will not be considered.

You may view the Draft Plan online at:
http://www.fws.gov/SOUTHWEST/refuges/Plan/completeplans.html or obtain a copy on compact disk.

Comments should be mailed, e-mailed, or provided orally by **4:30 p.m. (Mountain Standard Time), Friday, February 12, 2010** to:

Mark Sprick, AICP
Planning Team Leader
U.S. Fish and Wildlife Service
Division of Planning
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Thank you for your participation in our planning process. Your comments will help us prepare a better plan for the future of the Refuge.

Sincerely,

Rob Campellone, Chief of Planning

Rev: 8/28/09

DRAFT

Laguna Atascosa National Wildlife Refuge

Draft Comprehensive Conservation Plan
and
Environmental Assessment

2009-2024

(Date of Manager Signature here)

Prepared by:

U.S. Fish and Wildlife Service
Laguna Atascosa National Wildlife Refuge
Rio Hondo, Texas

And

Division of Planning
Region 2 - Southwest Region
P.O. Box 1306
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Comprehensive conservation plans provide long-term guidance for management decisions and set forth goals, objectives, and strategies needed to accomplish refuge purposes and identify the Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

COMPREHENSIVE CONSERVATION PLAN APPROVAL
for
Laguna Atascosa National Wildlife Refuge, Rio Hondo, TX

The attached Comprehensive Conservation Plan for the Laguna Atascosa National Wildlife Refuge has been prepared by Regional Office and Refuge Staff. The contents and format are found to be in compliance with Service policy on the preparation of Comprehensive Conservation Plans, and is hereby submitted for approval.

Submitted by:

_____ _____
Biologist/Natural Resource Planner Date

Approved by:

_____ _____
Refuge Manager Date

_____ _____
Project Leader Date

Concurrence by:

_____ _____
Refuge Supervisor, OK/TX Date

_____ _____
Regional Chief, NWR System, Region 2 Date

_____ _____
Regional Director, Region 2 Date
U.S. Fish and Wildlife Service

Refuge Vision

Laguna Atascosa National Wildlife Refuge (Refuge) comprises a unique and rare assemblage of south Texas habitats that represent some of the last undeveloped coastal areas in the United States. The Refuge is a unique blend of temperate, subtropical, coastal and desert habitats. Several biotic communities exist on the Refuge, including brushlands, coastal prairies, freshwater and brackish pothole wetlands, estuarine wetlands, lomas (clay ridges), wind tidal flats, and barrier island beaches and dunes. Mexican plants and wildlife reach their northernmost limits here, while migratory birds stop to rest and feed during the spring and fall. This combination makes Laguna Atascosa world famous for its mix of birds and other wildlife found nowhere else. Historically, the Refuge was primarily managed for migratory waterfowl, principally redhead ducks. Today, there is an expanded emphasis that now includes shorebird management and endangered species conservation. The Refuge is a premiere bird-watching destination with 415 recorded bird species, more than any other national wildlife refuge. A total of nine federally-listed endangered or threatened species occur within the Refuge, including four species of sea turtles. The largest United States population of endangered ocelot cats is located on the Refuge, making it the center for ocelot conservation and recovery.

The importance of the Refuge's wildlands will increase for wildlife and people in the future as the Lower Rio Grande Valley area becomes more urbanized. Additional lands will be protected and restored to connect and enhance the management of existing Refuge lands. Wildlife and habitat conservation will improve through conducting and supporting research dedicated to solving important Refuge resource issues. Management facilities will be constructed or improved to meet future Refuge management needs and objectives.

Photo: Carlos Fiol

Existing programs will be improved and new opportunities developed to connect people with nature through quality wildlife-dependent activities such as hunting, fishing, wildlife observation and photography, and environmental education and interpretation. The Refuge will improve outreach to diverse audiences, with an emphasis on local residents, to foster increased public appreciation and ownership of the Refuge and its role in the local community. Visitor service facilities and infrastructure will be improved or constructed to accommodate existing and new audiences. To meet future challenges, the Refuge will continue to build and maintain partnerships with governments, organizations, educational institutions, and public and private landowners.

1. Introduction and Background

This Comprehensive Conservation Plan (CCP) for the 97,007-acre Laguna Atascosa National Wildlife Refuge (NWR, Refuge) will guide management decisions during the next 15 years and set forth goals, objectives, and strategies for achieving the Refuge's vision. The Refuge will help to conserve the natural biological diversity of the broader Texas Gulf Coast Ecosystem with emphasis on protection and enhancement of waterfowl, migratory birds, federally-listed wildlife, and their habitats. The Refuge will maintain and establish good working partnerships with stakeholders and provide the greatest opportunities for the public to learn about and enjoy the refuge experience.

Laguna Atascosa NWR lies along the Gulf of Mexico at the southern tip of Texas, along the northeastern edge of Cameron County and the southeastern edge of Willacy County. The 97,007-acre Refuge consists of four main units:

1) Laguna Atascosa Unit, 45,187 acres

2) Bahia Grande Unit, 21,762 acres

3) South Padre Island Unit, 24,808 acres

4) Coastal Corridor Unit, 5,250 acres

Within these main units, 8,546 acres are part of the Lower Rio Grande Valley NWR, but they are administratively managed by the Refuge. The Laguna Atascosa Unit and main headquarters are located approximately 16 miles east of the town of Rio Hondo, Texas, on Farm-to-Market Road (FM) 106. The Bahia Grande Unit is sandwiched between State Highway (SH)100 and SH 48, about one mile west of Port Isabel, Texas. The South Padre Island Unit, which consists of 21 separate tracts, is located on the north end of South Padre Island with the first Refuge tract location about 9.5 miles north of the Town of South Padre Island, Texas. The Coastal Corridor Unit currently includes five separate tracts located between the Laguna Atascosa Unit and the Bahia Grande Unit (*Figure 1*). Laguna Atascosa NWR is part of the South Texas Refuge Complex (STRC), which includes the Lower Rio Grande Valley NWR and Santa Ana NWR.

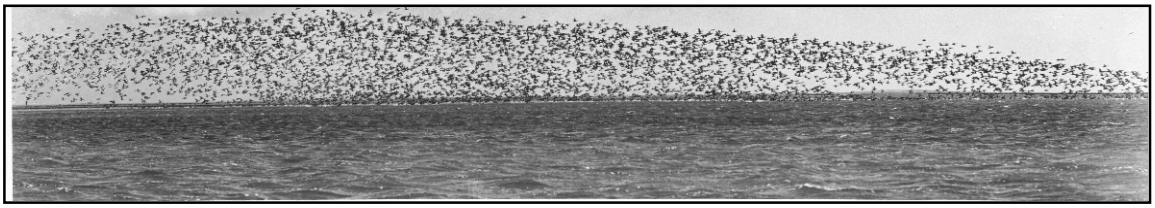
1.1 Refuge History and Purposes

Laguna Atascosa Unit

During the late 1800s and early 1900s, the area of Laguna Atascosa had long been known to naturalists as a significant waterfowl wintering and resting area. During the 1930s, U.S. Fish and Wildlife Service (Service) biologists, who conducted several reconnaissance surveys, recommended that this area be given consideration as a refuge. In 1940–1941, the Service began the process of evaluating various land tracts for acquisition in the Laguna Atascosa Lake area. However, in late 1941, the War Department began acquiring some of these tracts (10,521 acres) on the mainland and some tracts on South Padre Island (24,363 acres) for use as an aerial gunnery and bombing range during World War II. Although some of these lands were used by the military during the 1940s, the Service continued to focus on the area's importance to wintering waterfowl and to coordinate with the War Department: "*We have been interested for some time in securing a considerable acreage in this section, including a portion of the lands now being acquired by your department, in order to give protection to the large rafts of wintering redhead ducks that frequent this section of Laguna Madre...We would*

also like to suggest that when the present emergency comes to an end, the lands acquired by the War Department be placed under the administration of the Fish and Wildlife Service..." - Letter from Albert M. Day, Assistant to the Director of the U.S. Fish and Wildlife Service, to Colonel Robinson E. Duff of the War Department, September 6, 1941.

During the war years, the Service continued plans to establish a refuge in areas surrounding Laguna Atascosa because lands were also being cleared for development, resulting in a reduction of woodland habitat that supported large numbers of nesting white-winged doves at that time. *"...There was a good deal of activity in the clearing of this brush-grazing type for the purpose of putting the lands into citrus groves..."* - Rudolph Dieffenbach, Chief, Division of Lands, Memorandum of May 2, 1944. The *"...Atascosa refuge as proposed will include a variety of habitat extending from Redhead rafting and feeding grounds on Laguna Madre to inland lakes, ponds, resacas (creeks), and marshes utilized by many ducks, geese, herons, shorebirds, and other waterbirds. Coastal flats frequented by cranes, herons, and shorebirds, open woodland inhabited by deer, other mammals, and many species of migrant and resident land birds, and dense woodland populated by Chachalacas, White-winged Doves, White-fronted doves, and many other native species of birds and mammals."* -G.B. Saunders, Biologist, Migratory Bird Investigations, Division of Wildlife Research, Memorandum of February 11, 1944.



The great numbers of migratory waterfowl present on the Refuge, circa 1940s. Photo: USFWS

Following years of reconnaissance surveys and coordination with various interests, Laguna Atascosa NWR was formally established by the Migratory Bird Commission on October 31,1945, as a unit of the National Wildlife Refuge System, and the first 11,275-acre tract forming the Refuge was acquired on March 29, 1946. On January 12, 1949, 8,486 acres of the Refuge were acquired by transfer from the War Assets Administration to the Secretary of Interior under Public Law 80-537. These and subsequent Refuge tracts were acquired under the authorities of the Migratory Bird Conservation Act of 1929, the Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948, and the Fish and Wildlife Act of 1956 (*See Appendix E*).

Long-time area residents commented on the value of the Refuge for the protection of wildlife as the area become increasingly developed: *"...I have learned today...that the Fish and Wildlife Survey will take over the Laguna Gunnery Range in the eastern part of our county and want you to know that this is very gratifying news to me...I have lived down here since 1924 and for that time have seen the game slowly being wiped out and pushed back by the clearance of the native brush from land where the owner has desired to make more money farming or has sold out his land and the new owner cleared it for farming and of course we can not blame them as that is their business and their livelihood of making a living but not so long ago, and it really being after the close of deer season, I was up that way on the pavement running north and being directly west of the Gunnery Range and found that all of the native brush for a great distance west had been cleared out and the deer and javaline and quail dispersed and right in that particular vicinity there was no place for them to go except over in*

the northern part of the Gunnery Range which is still in native brush. Some of it was cleared out when the Gunnery Range was there but it is growing up again in second growth brush and with a few wet seasons it will all again be covered in brush and while I have absolutely no personal interest whatsoever, I would certainly like to see that whole Gunnery school taken over as a refuge for our wild fowl and also the remaining wild game." - Excerpted from a 1948 letter by W.B. Moothart to Luther C. Goldman, one of the first refuge managers for Laguna Atascosa NWR.

Bahia Grande Unit

Beginning in the late 1800s, the Bahia Grande area was well-known to early ornithologists (e.g., J.C. Merrill and G.B. Sennett) and naturalists for its abundant birdlife. On August 2, 1939, J. Clark Salyer, II, Chief of the Division of Wildlife Refuges, sent a 16-page report to Dr. Ira Gabrielson (first Director of the U.S. Fish and Wildlife Service), that summarized the findings of a three-year study of the Brownsville area. The purpose of the study was to locate suitable Refuge areas to protect *"...the great numbers of migratory waterfowl which annually winter in this region as well as the thousands of shore birds and a number of resident species of birds found only in the general Brownsville area of the United States."* The report recommended three areas in south Texas to be acquired as national wildlife refuges:

- Santa Ana tract, 3,400 acres south of Alamo, Texas in southern Hidalgo County
- Resaca de los Fresnos tract, 80 acres south of Harlingen, Texas
- San Martín Lake and Bahia Grande tract, 33,000 acres in southeastern Cameron County

The memorandum recommended the San Martín Lake and Bahia Grande area as a top priority for acquisition. However, only the Santa Ana tract was acquired as a result of the study, and it became Santa Ana NWR in 1943.

In the late 1990s, The Conservation Fund, a non-profit land conservation organization, led a complicated and time-consuming team effort to acquire the Bahia Grande and surrounding lands for the National Wildlife Refuge System (Refuge System, System). Negotiations were complex, as two of the landowner families had 30 to 40 stakeholders. The Natural Resources Conservation Service (NRCS) secured 30-year Wetland Reserve Program easements on two large tracts, totaling 17,060 acres, providing an important source of funding for the transaction. In 1999 and 2000, the Service purchased these two easement-protected tracts at a reduced price from The Conservation Fund. The Service directly purchased a little over 4,700 acres in smaller tracts from other landowners in the area, including a donated tract of 52.48 acres. The acquisition of land and easements totaled 21,762.5 acres. Because the Wetland Reserve Program easements were transferred from private ownership (i.e., The Conservation Fund) to Federal ownership (i.e., the Service), NRCS rescinded the two 30-year Wetland Reserve Program easements and transferred total management of the area to the Service in 2007.

South Padre Island Unit

In 2000, The Nature Conservancy (TNC) acquired 24,532 acres on the north end of South Padre Island to conserve the important barrier island ecosystem and the lower Laguna Madre. In May 2003, all of TNC's land holdings on South Padre Island were transferred to the Service, except for a 1,548-acre parcel and three smaller land parcels, totaling 1,609 acres. It was the original intent of TNC to transfer all or part of the property to the Service for inclusion in the Refuge. However, the decision to retain the 1,609 acres was influenced by TNC's desire to establish a coastal preserve in the Laguna Madre region, which TNC called the South Padre Island

Preserve. In addition, Willacy County and the Willacy County Navigation District supported this decision and asked that TNC retain this land.

In November 2005, TNC's South Padre Island Preserve was the subject of a proposed condemnation effort by Willacy County, when the county announced plans to initiate proceedings to acquire the preserve using eminent domain to create a county park to provide public access to the barrier island from Port Mansfield via boat. However, condemnation proceedings did not commence, and TNC continued to negotiate with Willacy County regarding public access. In 2006, the Service entered into a management agreement with TNC to administer the South Padre Island Preserve as part of the Refuge, and in June 2007, TNC donated the preserve in fee title to the Refuge.

Coastal Corridor Unit

The Coastal Corridor Unit is located in the area between the Laguna Atascosa Unit and the Bahia Grande Unit with the goal to provide a narrow link between these larger Refuge units. The Unit's purpose is to provide habitat and safe travel corridors for a variety of wildlife, particularly ocelots.

Most of the existing Coastal Corridor tracts were farmed in the past and are in various stages of habitat succession from fallow farm fields to mesquite-grass woodlands. The corridor is currently comprised of two Refuge tracts (the 22-acre Sendero del Gato and the 12-acre Escondido). Other tracts within the Coastal Corridor Unit include two Lower Rio Grande Valley NWR tracts (the 12-acre Resaca de la Gringa and the 400-acre Waller). The Resaca de la Gringa was the first tract acquired (1995), followed by the Waller (2002), Tocayo (2003), El Sendero del Gato (2006), and Escondido (2006) tracts *(See Appendix I)*.

Purposes of Laguna Atascosa NWR:

> *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds…"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended;
>
> *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended;
>
> *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."* Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."* Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

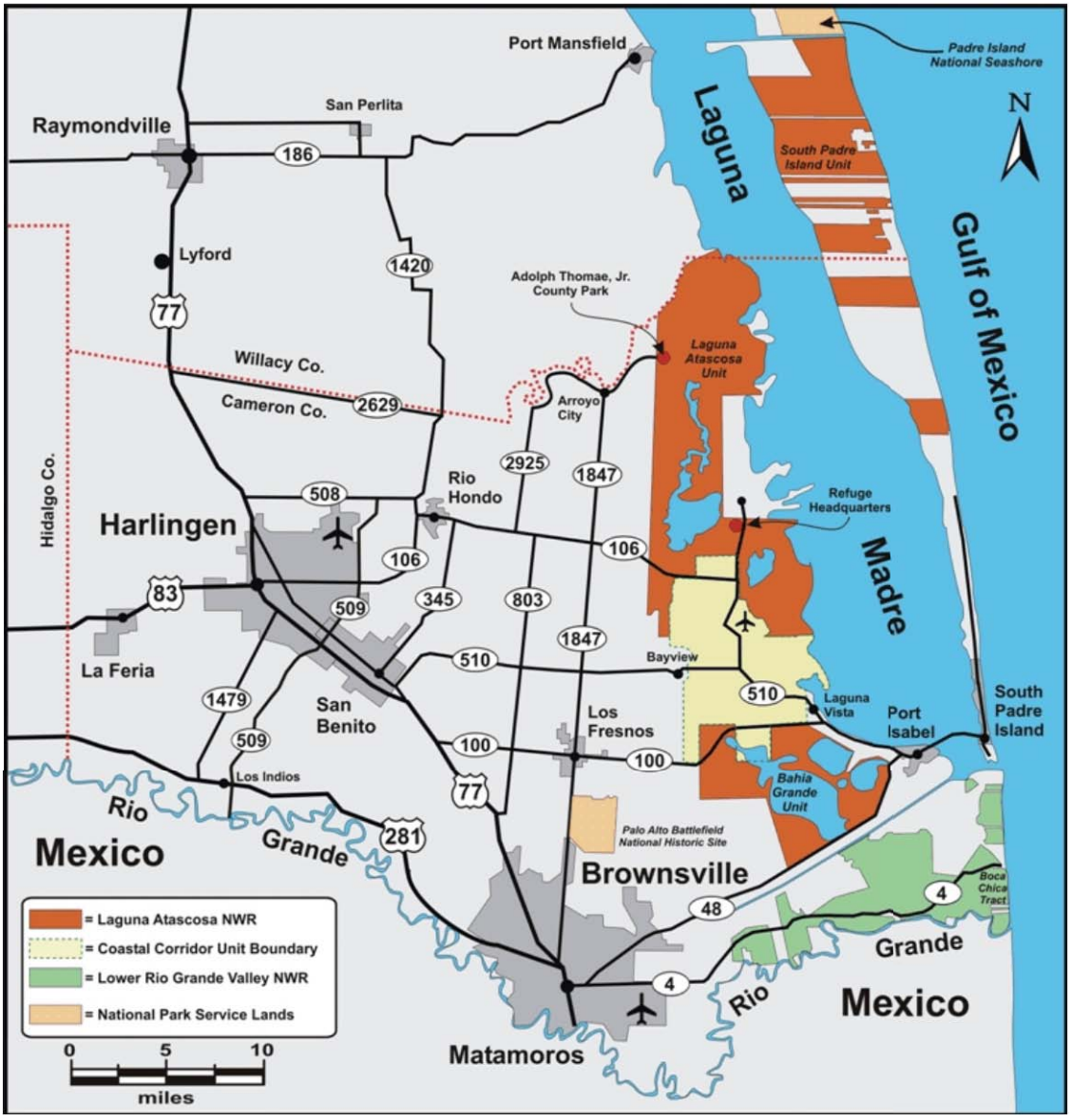


Figure 1. Laguna Atascosa NWR and Vicinity

1.2 Purpose and Need for the Plan

The purpose of comprehensive conservation planning is to "*...provide long range guidance for the management of national wildlife refuges.*" As such, all lands of the National Wildlife Refuge System are to be managed in accordance with an approved CCP that will guide management decisions and set forth strategies for achieving refuge purposes. The Refuge Improvement Act of 1997 requires all refuges to have a CCP and provides the following legislative mandates to guide the development of the CCP:

- Wildlife has first priority in the management of refuges.
- Wildlife-dependent recreation activities such as hunting, fishing, wildlife observation and photography, and environmental education and interpretation are priority public uses of

refuges. We will facilitate these activities when they do not interfere with our ability to fulfill the Refuges' purpose or the mission of the Refuge System.

- Other uses will only be allowed when they are determined appropriate and compatible with the purposes of the Refuge and the Refuge System mission.

This CCP provides long-term direction for present and future refuge managers for the next 15 years. It describes management activities, important fish and wildlife resources that occur on the Refuge, wildlife-dependent recreational and educational opportunities and provides goals, objectives and specific strategies designed to fulfill the Refuge's vision for the future.

1.3 U.S. Fish and Wildlife Service Mission

The U.S. Fish and Wildlife Service is the principal Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service has a primary responsibility to manage and protect Federal trust species, which includes migratory birds, threatened species, endangered species, interjurisdictional fish, marine mammals, and other species of concern. Specific responsibilities include enforcing Federal wildlife laws, managing migratory bird populations, restoring nationally significant fisheries, administering the Endangered Species Act, conserving and restoring wildlife habitat such as wetlands, and helping Native American tribal governments and foreign governments with their conservation efforts. It also oversees the Federal Assistance Program, which distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to State fish and wildlife agencies. The Service also manages the National Wildlife Refuge System. The mission of the U.S. Fish and Wildlife Service is:

> *"working with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."*

1.4 National Wildlife Refuge System Mission and Goals

Managing the National Wildlife Refuge System has evolved into a significant role for the Service. Founded in 1903 by President Theodore Roosevelt with the designation of Pelican Island as a refuge for nesting pelicans, the Refuge System is the world's largest collection of lands and waters specifically managed for fish and wildlife. The Service manages the 97-million-acre Refuge System, which encompasses 548 national wildlife refuges, thousands of small wetlands, and other special management areas *(See Figure 2)*. Refuges provide habitat for more than 5,000 species of birds, mammals, fish, and, invertebrates.

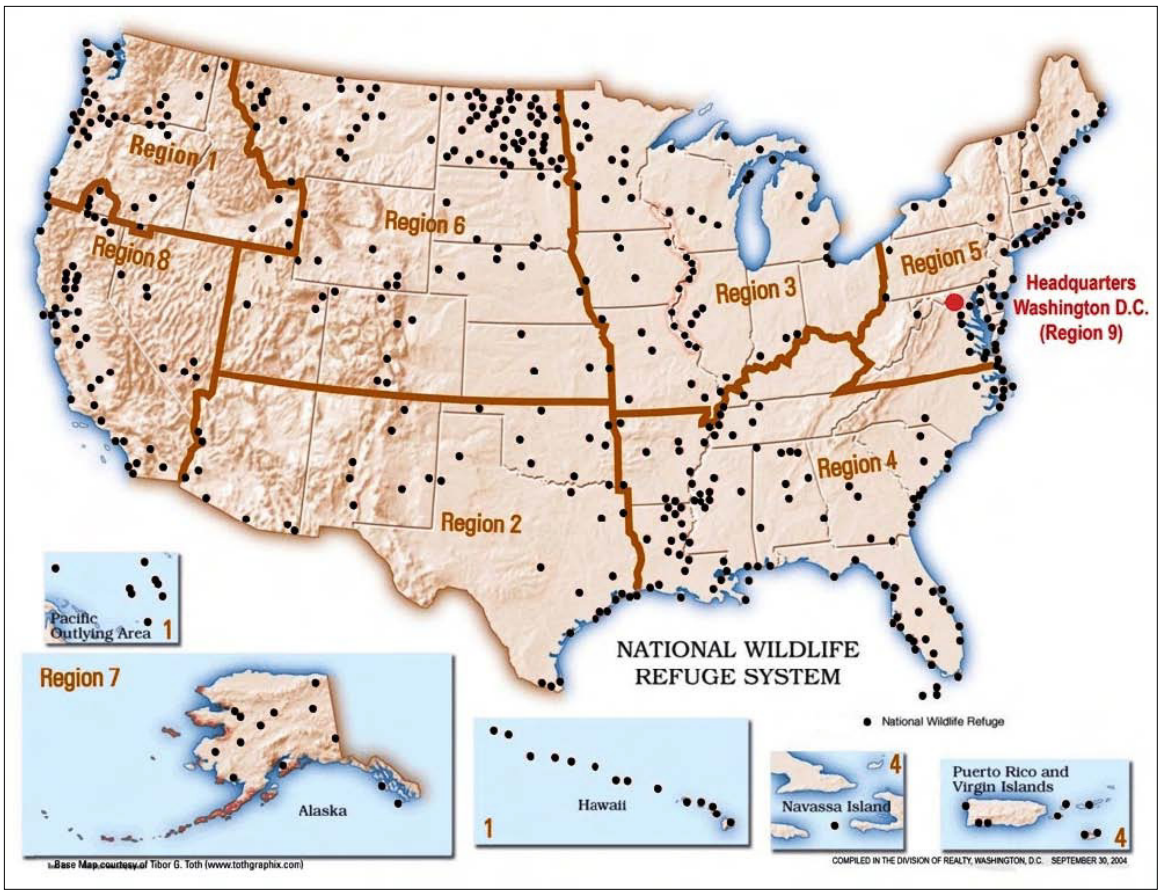


Figure 2. National Wildlife Refuge System

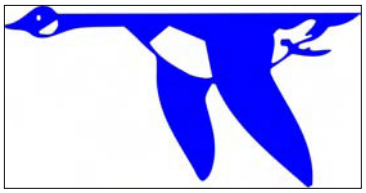
Many early national wildlife refuges, such as Pelican Island NWR, were created for herons, egrets, and other waterbirds or for the specific requirements of trust resources such as elk or bison. However, most refuges have been created to protect migratory birds, primarily waterfowl. This is a result of the United States' responsibilities under international treaties for migratory bird conservation and other legislation, such as the Migratory Bird Conservation Act of 1929.

National wildlife refuges also play a vital role in preserving endangered and threatened species. Among the refuges that are well-known for endangered species is Laguna Atascosa NWR, which provides important habitat for the endangered ocelot. Other well-known refuges include the Florida Panther NWR, protecting one of the Nation's most endangered mammals, and the Aransas NWR, providing critical wintering habitat for whooping cranes.

Refuges also provide unique opportunities for people. When it is compatible with refuge purposes, refuges can be used for wildlife-dependent activities such as hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Many refuges have visitor centers, wildlife trails, auto tour routes, and environmental education programs. Nationwide, approximately 35 million people visit national wildlife refuges annually.

The mission of the Refuge System is:

> *"to administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."*



The Blue Goose: Symbol of the National Wildlife Refuge System. Photo: USFWS

The goals of the Refuge System are to:

a) *Conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered;*

b) *Develop and maintain a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges;*

c) *Conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts;*

d) *Provide and enhance opportunities to participate in compatible wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); and*

e) *Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.*

1.5 Legal and Policy Guidance

Administration of national wildlife refuges is guided by refuge purposes, the mission and goals of the National Wildlife Refuge System, Federal law, Presidential executive orders, and international treaties. Refuge management is further refined by Service policy, as provided in the Service Manual, director's orders, and memorandums. Most recently, the National Wildlife Refuge System Improvement Act of 1997, which amended the Refuge System Administration Act of 1966, includes a unifying mission for the Refuge System, a new process for determining compatible uses on refuges, and a requirement that each refuge will be managed under a CCP. It also requires the Secretary of the Interior (Interior) to maintain the biological integrity, diversity and environmental health of the Refuge System (Biological Integrity Policy; Service Manual 601 FW 3). For a more complete listing of relevant legal mandates and policies guiding refuge management, see Appendix F.

Coordination with the State of Texas (Texas Parks and Wildlife Department)

In administering the Refuge System, the Service will ensure that the CCP complements State efforts to conserve fish and wildlife and their habitats and to increase support for the Refuge System and participation from conservation partners and the public. During the development of the CCP, the Service is required to consult and coordinate with affected State conservation agencies, as well as adjoining Federal, local, and private landowners. The Service is required to ensure effective coordination, interaction, and cooperation in a timely and effective manner with the State during the course of acquiring and managing refuges. Under the Refuge Administration Act of 1966 and 43 CFR 24, the Secretary of the Interior,

acting through the director of the Service, is required to ensure the Refuge System regulations and management plans are, to the extent practicable, consistent with State laws, regulations, and management plans.

1.6 Existing Partnerships

Laguna Atascosa NWR staff work with a variety of individuals and organizations to accomplish habitat management, outreach, and environmental education projects. Some current partners include the Friends of Laguna Atascosa NWR; NRCS (U.S. Department of Agriculture); irrigation and drainage districts; the chambers of commerce of Harlingen, Brownsville, and South Padre Island; private non-profit conservation groups; and private landowners. The Cameron County Parks Department has a 25-year Cooperative Management Agreement with the Service to manage a 57-acre area on the Refuge just east of Arroyo City known as the Adolph Thomae Jr. County Park. This agreement has provided an excellent opportunity to provide additional opportunities for quality wildlife-dependent activities such as fishing, wildlife observation, photography, and hiking. Refuge law enforcement (LE) has established partnerships with the Cameron County Sheriff's Office and Texas Parks and Wildlife Department (TPWD) to assist with LE operations on the Refuge. Refuge law enforcement also has a "Local Interagency Agreement" (2005) with the Willacy County Sheriff's Office to provide LE assistance in the northernmost portions of the Refuge (South Padre Island).

The Bahia Grande Restoration Partnership, which includes more than 65 partners, works with the Refuge to help restore the Bahia Grande wetland system. Some of the Bahia Grande partners include the University of Texas-Brownsville/Texas Southmost College, Brownsville Navigation District, Texas Department of Transportation (TXDOT), and local businesses and groups. Some of the endangered ocelot program partners include the Friends of Laguna Atascosa NWR, Gladys Porter Zoo-Brownsville, TPWD, Environmental Defense, TNC, The Conservation Fund, Marine Military Academy, TXDOT, Dallas Zoo, Comisión Nacional de Áreas Naturales Protegidas (CONANP), Caesar Kleberg Wildlife Research Institute (CKWRI), Immigration and Customs Enforcement-Bayview Detention Facility, irrigation and drainage districts in Cameron and Willacy counties, and private landowners. Some of the biological program partners include Ducks Unlimited, The Peregrine Fund, Inc., Sea Turtle, Inc., the Town of South Padre Island, The National Audubon Society, National Marine Fisheries Service, Padre Island National Seashore (National Park Service), UT-Pan American Coastal Studies Lab, Cameron County Parks Division, Arroyo Colorado Watershed Partnership, and CKWRI. Far less would be accomplished within and beyond the Refuge boundaries without these important partnerships.

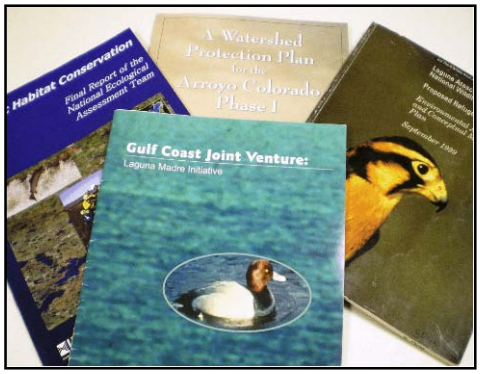
Bahia Grande Partner. Photo: UTB-TSC

Pelicans and Plovers. Illustration: Ram Papish

2. Planning Process: Considerations, Perspectives, and Issues

The development of this CCP has incorporated the directives, policies and regulations of the Service, the Refuge System, and Refuge purposes to assist in providing guidance to the Refuge for long-range management decisions. In addition, this CCP incorporates important goals and objectives of other applicable plans, approaches, or initiatives such as those described in the following sections.

2.1 Strategic Habitat Conservation



An important overall force guiding the biological and habitat goals and objectives of the CCP includes a focus on fish and wildlife conservation, not just on the Refuge, but on a landscape level, which is the Service's ecosystem approach to management. In 2006, the National Ecological Assessment Team released the Strategic Habitat Conservation (SHC) report. SHC is defined as a structured, science-driven approach for making efficient, transparent decisions. SHC is a means to achieve the goals and principles of the Service's ecosystem management approach. The 2006 SHC report outlines a decision-making process for conservation actions on a landscape level containing four key elements:

- biological planning
- conservation design
- delivery of conservation actions
- monitoring and research, which are implemented in an adaptive management loop (USFWS/USGS 2006)

Using the SHC approach, we improve our abilities to protect and enhance wildlife populations and their ecology through more efficient uses of resources that are focused on key priority species (i.e., focal species) representative of larger guilds of species or groups that use habitats similarly. The guiding principles of SHC involve defining measurable population objectives; using the best scientific information available; implementing management actions that are defensible; incorporating an "adaptive management" approach; and working with partners. The goal of strategic habitat conservation is the conservation of populations and the ecological functions that sustain them (USFWS/USGS 2006).

2.2 The Ecosystem Approach to Management

The Service has adopted an ecosystem approach to more effectively achieve its mission of fish and wildlife conservation for future generations (Service Manual 052 FW1, Planning and Management). The ecosystem approach is defined as *"...protecting or restoring the natural function, structure, and species composition of an ecosystem while recognizing that all components are interrelated."* Ecosystem management includes preservation and enhancement of ecological integrity and sustainable levels of economic and recreational

activity. Central to the successful implementation of the ecosystem management approach is involvement of partners from Federal, State, and local governments and the private sector, especially landowners. The Service has identified 52 ecosystems within the United States based on watershed designations. Laguna Atascosa NWR occurs within two major ecosystems: 1) the Lower Rio Grande Ecosystem, as described in the Lower Rio Grande/Rio Bravo Bi-National Ecosystem Management Plan, and 2) the Texas Gulf Coast Ecosystem. Important elements of the Lower Rio Grande Ecosystem are considered in this CCP; however, since the Refuge primarily occurs within the Texas Gulf Coast Ecosystem, that ecosystem will guide in the development of goals, objectives, and strategies of this CCP.

2.3 The Texas Gulf Coast Ecosystem

The Texas Gulf Coast Ecosystem lies between the Sabine River and the mouth of the Rio Grande and inland to include the historical coastal prairie. This is also similar to the area described in the Service's 1981 Ecological Characterization of the Texas Barrier Islands Region and the area covered under the Gulf Coast Joint Venture (Laguna Madre Initiative Area) of the North American Waterfowl Management Plan. The Texas Gulf Coast Ecosystem area corresponds to the Gulf Prairies and Marshes ecological area delineated by Gould *et al.*, 1960 (*Figure 3*). The Service's goal for the Texas Gulf Coast Ecosystem is to help restore, maintain, and enhance the level of natural species diversity (floral and faunal communities) indigenous to this ecosystem in close cooperation with resource management agencies, other government and non-governmental entities, industries, private landowners, and other citizenry.

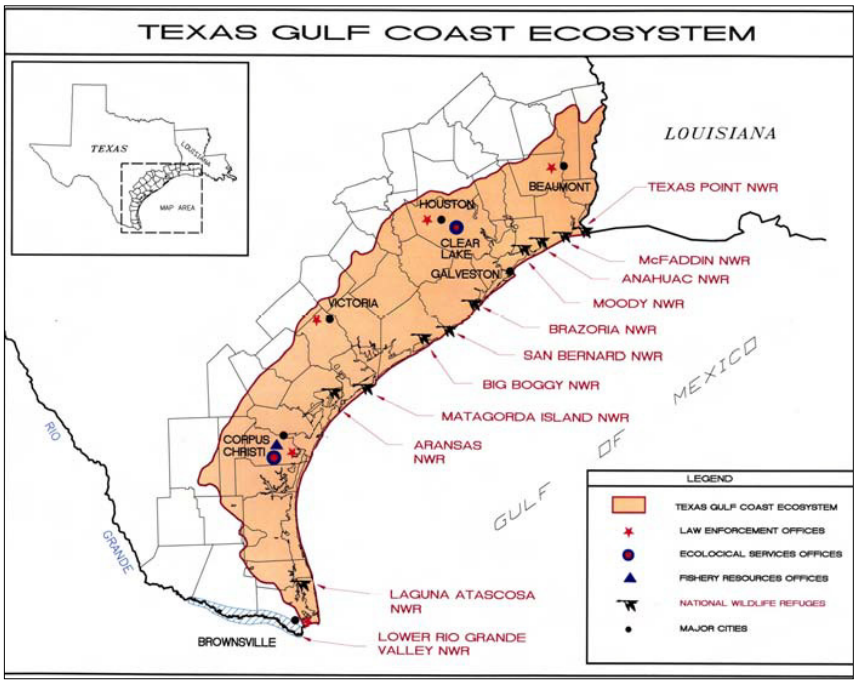


Figure 3. Texas Gulf Coast Ecosystem Map

The prominent features of this ecosystem include the coastal prairies, which in many places contain small depressional wetlands but that are now largely fragmented by agricultural and urban development; coastal marshes, which are mostly tidal but also include both isolated and transitional fresh and intermediate marshes; bays and lagunas, which support extensive seagrass beds; tidal flats and reef complexes; barrier islands; and forested riparian corridors, mottes, and dense brushy habitat. Natural forces that shape the system include prevailing southeast winds, tropical weather systems, and a substantial gradient in rainfall from more than 60 inches per year on the upper coast to less than 20 inches per year on the lower coast.

Other key systemic processes include flooding and freshwater inflows that create estuaries and add nutrients and sediments.

Biotic Communities within the Lower Rio Grande Valley of Texas

This CCP will focus on lands managed by the Service within the Texas Gulf Coast Ecosystem within the Lower Rio Grande Valley of Texas (LRGV or the Valley). According to Jahrsdoerfer and Leslie (1988), there are 11 distinct biotic communities occurring in the LRGV. Several of these biotic communities that occur on Laguna Atascosa NWR include clay loma/wind tidal flats, wooded potholes and basins, and coastal brushland potholes (*Figure 4*). Clay loma/wind tidal flats are miniature ecosystems of wooded islands in tidal flats that are periodically inundated by water from South Bay and the Gulf of Mexico. Lomas are formed from wind-blown silt or clay particles originally deposited in tidal flats by periodic flooding of the Rio Grande (Jahrsdoerfer and Leslie 1988). Wooded potholes and basins are freshwater and saline wetlands or potholes surrounded by brushlands, which become islands of wildlife habitat or "greentree reservoirs" for wintering waterfowl amidst an agrarian landscape (Jahrsdoerfer and Leslie 1988). Coastal brushland potholes are coastally-influenced wooded wetlands that vary in salinity from freshwater to saline estuaries. This biotic community is influenced by moving sand dunes (Jahrsdoerfer and Leslie 1988). Since the early 1900s, approximately 95 percent of the native brushland habitat of the LRGV was cleared for agriculture and urban development (Collins 1984). The remaining five percent, which includes Laguna Atascosa NWR, still supports many unique and rare species, some found nowhere else in the world. In Cameron County alone, approximately 91 percent of the original native woodland cover has been lost between the mid-1930s and 1983, from 202,128 acres down to 19,274 (Tremblay *et al*. 2005). Currently, urban expansion is the primary threat to the natural environment in the LRGV (Tremblay *et al*. 2005 after Paull *et al.* 2002). This is also true of the lands surrounding Laguna Atascosa NWR as the area is experiencing resort-type development and other associated development along the Laguna Madre and just inland.

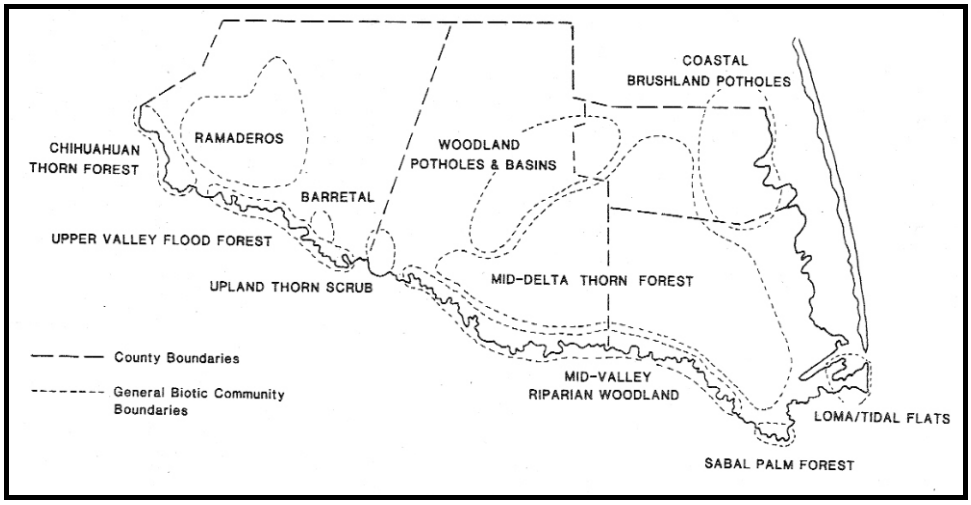


Figure 4. Biotic Communities of the LRGV

2.4 Other Plans and Initiatives Relevant to CCP Planning

Refuge-Specific Plans

Laguna Atascosa NWR Master Plan (1989)

The Refuge's master plan was last revised to address two circumstances. In addition to preserving and managing resting and feeding habitats for migrating and wintering waterfowl, it became necessary to 1) address the decline in diving ducks, particularly redhead ducks and 2) manage for endangered species (ocelot and jaguarundi) (USFWS 1989). This plan, which provided a more balanced management program for these important fish and wildlife resources and provided updated public uses, is the current guiding document and will be replaced by this CCP.

Laguna Atascosa NWR Refuge Expansion and Conceptual Management Plan (1999)

This plan outlines several alternatives regarding Refuge expansion and includes a Conceptual Management Plan for any lands acquired after 1999. The alternative adopted by the Service outlines a plan to buy additional lands or conservation easements from willing sellers—up to 108,127 acres of land adjacent to or near the existing 45,187-acre Laguna Atascosa NWR, bringing the Refuge's acquisition goal to 153,314 acres. The acquisition area is limited to eastern Cameron County (around the Laguna Atascosa Unit and on South Padre Island north of Park Road 100) and Willacy County (South Padre Island). (*See Figure 5*).

The reasons for the Refuge expansion are to:

- provide additional riparian and thicket habitats for the endangered ocelot, which is currently limited to fewer than 30 animals
- protect and enhance migratory bird habitats such as those of San Martín Lake and Bahia Grande, Resaca de los Cuates, and other water bodies in the project area
- protect habitats on South Padre Island for species such as endangered sea turtles, peregrine falcons, piping plovers, other shorebirds, wading birds, waterfowl, and Neotropical migrants
- protect fishing, hunting, and other wildlife-dependent public recreational opportunities for future generations.

The preferred actions and outline described in the Conceptual Management Plan have been incorporated into the objectives and strategies of this CCP.

Lower Rio Grande Valley NWR Land Protection Plan (1983)

The LRGV has long been recognized as a unique wildlife area containing extremely rare wildlife and habitats. During the 1930s, Service biologists conducted several surveys in the LRGV to establish wildlife refuges. They recommended the acquisition of several tracts of land, including Santa Ana NWR, Laguna Atascosa NWR, and the Bahia Grande Unit. By the 1980s, over 95 percent of the native Tamaulipan brushland in the Valley had been cleared for agriculture, urban development, and recreation, and 99 percent of the native brush in riparian areas had been destroyed (Jahrsdoerfer and Leslie 1988). The Lower Rio Grande Valley NWR was established in 1979 to protect important biotic communities in the LRGV but primarily focused on the establishment and protection of a wildlife corridor along the Rio Grande. The Service's 1983 land protection plan for the Lower Rio Grande Valley NWR identifies that, *"...the best preservation alternative appears to be a combination fee and easement purchase*

program to establish a wildlife easement corridor along the river between fee management units and utilization of the same approach connecting the La Sal Vieja area." According to the 1983 plan, *"The primary objective of the Lower Rio Grande Valley NWR is the maintenance of the existing wildlife populations...and the preservation of existing remnants of important wildlife habitat in the LRGV of Texas without extirpation or extinction of any of a longer list of vertebrate species."* Collins (1984) identified riparian and scrub forest associated with the Rio Grande as a major habitat type and stated that "*...the FWS brush protection and acquisition program revolves around the maintenance and protection of the north bank of the Rio Grande as a wildlife corridor. The terraces and associated vegetation immediate to the river are of prime importance as travel lanes for wildlife, allowing genetic exchange between the refuges and existing natural cover.*"

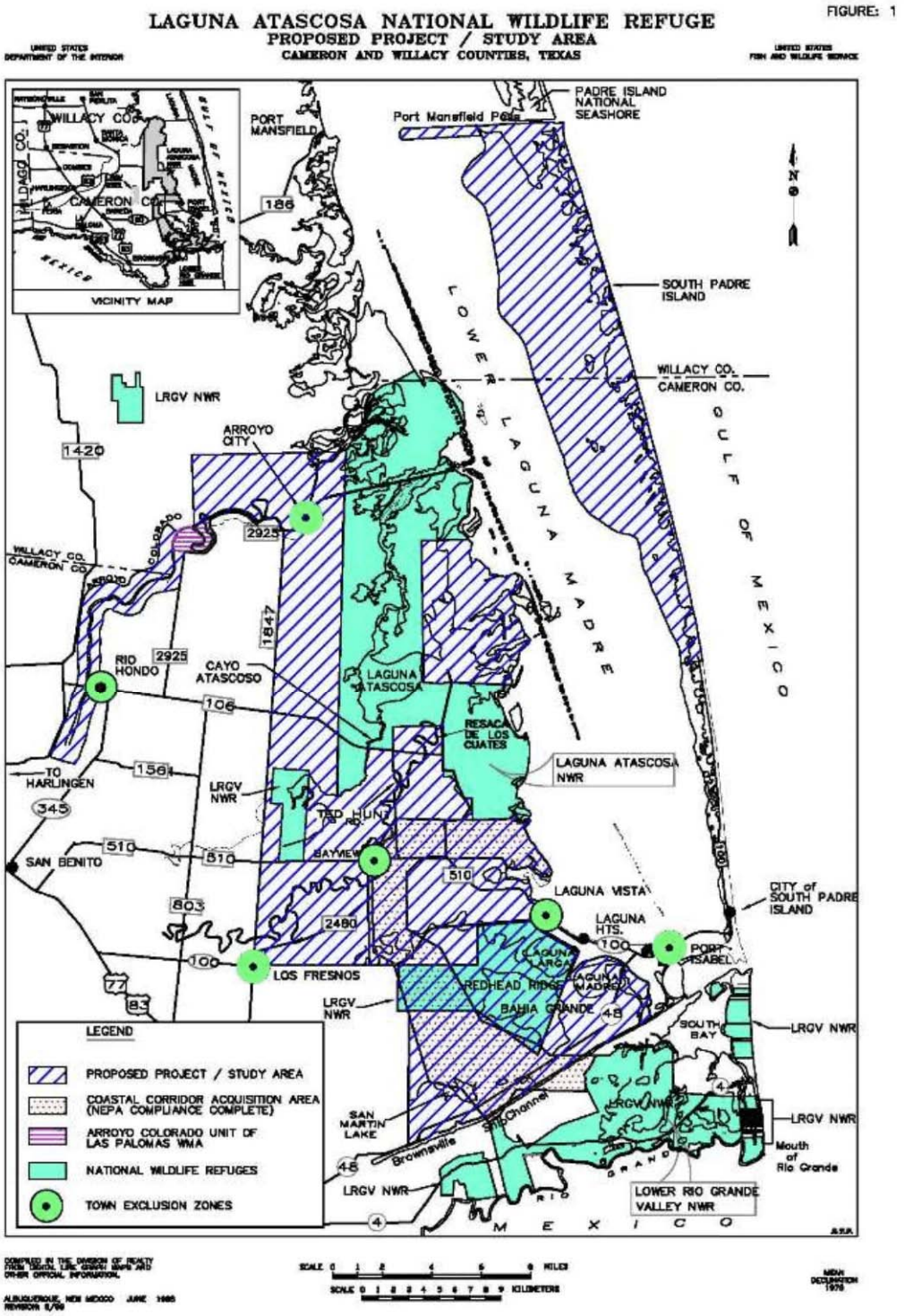


Figure 5. 1999 Acquisition Area (cross-hatched area)

Lower Rio Grande Valley NWR Comprehensive Conservation Plan (1997)

The CCP for the Lower Rio Grande Valley NWR outlines a vision that this refuge *"...will someday be 132,500 acres of mostly contiguous tracts of natural brush, reforested farmlands and wetlands."* A major goal for the Lower Rio Grande Valley NWR is *"to restore, enhance, and protect the natural diversity of the LRGV including threatened and endangered species on and off refuge lands, through (1) land acquisition when appropriate, (2) the management of habitat and wildlife resources on refuge lands; and, (3) by strengthening existing, and establishing new cooperative efforts with public and private conservation agencies, and other government jurisdictions including Mexico."* Major land acquisition objectives are to *"Continue to pursue acquisition goal of 132,500 acres for the Lower Rio Grande Valley NWR by purchasing fee title lands or conservation easements within the river corridor and other lands within the four-county area that will contribute to the preservation and enhancement of any of the 11 biotic communities..."* and to *"...acquire lands (tracts) that will: (1) Provide for the protection of endangered species; (2) Assist in the achievement of a contiguous river wildlife corridor; (3) Enlarge established brush tracts or create corridors connecting tracts of native habitat; (4) Enhance or connect existing refuge tracts not on or near the river; and, (5) Protect isolated tracts of desirable habitat."*

Wildlife Corridors - There are two important land units (Laguna Atascosa Unit and Bahia Grande Unit) that make up part of the Laguna Atascosa NWR, that should be linked to the Lower Rio Grande Valley NWR's wildlife corridor. Given the pace of development in the LRGV and the number of isolated refuge tracts Valley-wide, wildlife corridors are a key conservation tool to address not only the long-term protection of native biotic communities but also to help address the recovery of endangered species such as the ocelot and jaguarundi.

To help implement ocelot recovery in the LRGV, there is a need to establish at least five corridors:

1. a "Ranchito Corridor" from the Refuge to the Ranchito Tract (Lower Rio Grande Valley NWR);
2. a "Coastal Corridor" from the Laguna Atascosa Unit to the Bahia Grande Unit (i.e., Coastal Corridor Unit);
3. a "Boca Chica Corridor" from the Bahia Grande Unit to the Boca Chica Tract (Lower Rio Grande Valley NWR);
4. a "Ranchland Corridor" from the Laguna Atascosa Unit to the Lower Rio Grande Valley NWR tracts (i.e., Willamar, El Jardin, and San Perlita), and ranch country to the north (e.g., Yturria); and
5. a "North Valley Corridor" running east-west from the Ranchland Corridor Refuge tracts and ranch country along the coast to the Lower Rio Grande Valley NWR tracts in northern Willacy and Hidalgo Counties (e.g., East Lake, Teniente, La Sal del Rey).

This would help achieve important ocelot recovery goals, as well as protection of the Valley's unique wildlife and habitat. Some of these corridors are outside Laguna's approved acquisition boundary; however, they are within Lower Rio Grande Valley NWR's approved acquisition boundary *(See Figure 6)*. Therefore, there is a need to coordinate land acquisition strategies within the STRC, which includes the Lower Rio Grande Valley NWR. These protected corridors will enable movement of terrestrial wildlife between protected areas, connect isolated populations, increase resilience of wildlife to catastrophic events (e.g., hurricanes, droughts, and

disease outbreaks), and ensure the existence of important wildlife in perpetuity as development in the LRGV continues.

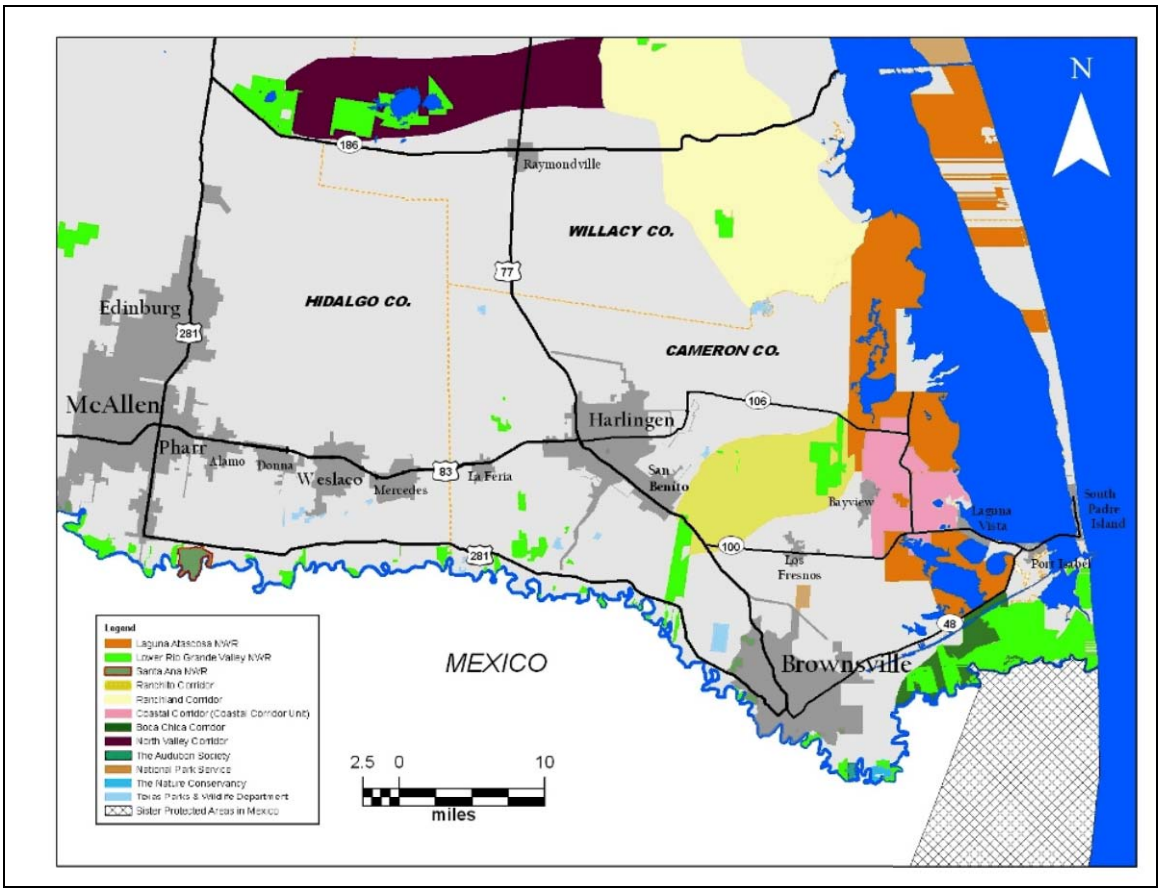


Figure 6. Wildlife Conservation Corridors

National Plans and Initiatives

Lower Rio Grande/Rio Bravo Bi-National Ecosystem Management Plan (2003)

The Lower Rio Grande/Rio Bravo Bi-National Ecosystem Management Plan established a vision, objectives, strategies, and activities for the protection and restoration of native plants and animals of the Lower Rio Grande Valley area of Texas on both sides of the international border. This plan defines the ecosystem as Tamaulipan brushland from Falcon Dam to Boca Chica, 65 miles on either side of the Rio Grande within the Tamaulipan Biotic Province as described in Blair (1950; Dice 1943). Tamaulipan brushland is characteristically dense and thorny, dominated by such species as Texas ebony, retama, granjeño, huisache, prickly pear cactus, and mesquite. However, because of the variety of Tamaulipan brushland types owing to differences in soil, geology, and elevation, it is further classified into 11 biotic communities as described in Jahrsdoerfer and Leslie (1988).

The plan's vision is to foster joint Bi-National participation in the ecosystem management of natural areas in the Lower Rio Grande/Rio Bravo Ecosystem for sustainable resource management. Plan objectives have been divided into three main conservation categories:

1) water, 2) species and habitats, and 3) education. Objectives include maintaining and improving water quality and quantity, managing invasive species, prioritizing recovery and management of federally-listed species (*See Section 3.2.6*), and increasing public awareness of the value of these natural resources through such means as ecotourism. Laguna Atascosa's CCP incorporates many of the elements to facilitate implementation of this ecosystem plan.

U.S. Fish and Wildlife Service Migratory Bird Program Strategic Plan 2004–2014 "A Blueprint for the Future of Migratory Birds"

Developed by the Service's Migratory Bird Program, this plan's main goal is *"...to increase the percent of species of migratory birds that are at healthy and sustainable levels."* The plan identifies "focal species"that are considered to be of a priority emphasis in the overall context of landscape-scale integrated bird conservation. These species all share a high conservation need and are representative of larger groups of birds that share similar or the same conservation needs. The plan also calls for partnerships inside and outside the Service essential to the implementation of action plans. About 30 of these Migratory Bird Program focal species frequently occur on the Refuge (*See Sections 3.2.7 and 3.2.8*).

North American Waterfowl Management Plan - Gulf Coast Joint Venture: Laguna Madre Initiative Area (2002)

The North American Waterfowl Management Plan (NAWMP) was launched in 1986 in response to record low waterfowl numbers observed in the early 1980s. Recognizing the importance of waterfowl and wetlands to North Americans and the need for international cooperation to help in the recovery of shared resources, the Canadian and United States governments,and later the Mexican government, developed a strategy to restore waterfowl populations to levels seen in the 1970s. The purpose of the NAWMP is to achieve waterfowl conservation (through habitat protection, restoration, and enhancement) while maintaining or enhancing the associated ecological values in harmony with human needs (Esslinger and Wilson 2002). Regional partnerships, called joint ventures, are the implementing mechanisms of the NAWMP. Within the Gulf Coast Joint Venture are six initiative areas. Laguna Atascosa NWR occurs in the Laguna Madre Initiative Area. This initiative area comprises five counties along the extreme lower coastal plain of Texas, from Corpus Christi Bay to the mouth of the Rio Grande. The goal of the Laguna Madre Initiative is to provide wintering and migration habitat for significant numbers of redhead ducks, greater and lesser scaup, northern pintails and other dabbling ducks, as well as year-round habitat for mottled ducks (Esslinger and Wilson 2002).

According to the plan, habitat conservation is imperative for meeting the waterfowl population objectives, especially on coastal marshes, and for improving the waterfowl value of agricultural lands. The two major waterfowl habitats in the initiative area are hypersaline lagoons, with associated seagrasses, and freshwater wetlands. To sustain the plan's waterfowl population objectives, an estimated 2,225 acres of seasonal wetlands from late August through October, and an additional 10,133 acres from November through March, are needed within the initiative area. In addition, the plan recommends restoring or creating 2- to 12-acre freshwater wetlands adjacent to the Laguna Madre. Planning objectives for Laguna Atascosa NWR in support of the NAWMP include maintenance of existing habitat, wetland restoration activities such as those at Bahia Grande, acquisition of additional lands as described in the 1999 Refuge Expansion Plan, and specific habitat activities in support of CCP focal waterfowl species (*See Section 3.2.8*).

Partners in Flight (1990)

Partners in Flight (PIF) was launched in response to growing concerns about declines in the populations of several land bird species and to emphasize the conservation of birds not covered by existing conservation initiatives. The PIF vision is: *"Populations of native birds will occur in their natural numbers, natural habitats and natural geographic ranges, through coordinated efforts by scientists, government and private citizens."* The initial focus was on species that breed in North America and winter in Central and South America, but the focus has since expanded to include most other birds requiring terrestrial habitats. PIF is a cooperative effort involving partnerships of Federal, State, and local government agencies, philanthropic organizations, professional organizations, conservation groups, industry, the academic community, and private individuals.

According to PIF, habitat loss (including fragmentation) remains the paramount factor behind population declines of most bird species, such as those of native prairies. Many of the species described in the North American Landbird Conservation Plan by PIF (Rich *et al.* 2004) migrate through or winter at Laguna Atascosa NWR and therefore depend on quality upland habitats such as brush-covered lomas, riparian, resaca (ox-bow lake) vegetation, and coastal prairies found on the Refuge. Specific recommended actions pertaining to the Bird Conservation Region in which the Refuge occurs, include 1) continuing community-growth planning in high development areas such as in the Brownsville and Port Isabel area, 2) maintaining many patches of high quality grasslands, and 3) developing community-involved, well planned fire management strategies in woodlands and grasslands.

U.S. Shorebird Conservation Plan (2001)

The U.S. Shorebird Conservation Plan is a partnership involving organizations throughout the United States committed to the conservation of shorebirds. The organizations and individuals working on the plan have developed conservation goals for each region of the country, identified critical habitat conservation needs and key research needs, and proposed education and outreach programs to increase awareness of shorebirds and the threats they face. Major goals of the plan are to ensure that an adequate quantity and quality of habitats is identified and maintained locally and to maintain or restore shorebird populations at the continental and hemispheric levels. Laguna Atascosa NWR occurs in the Central Flyway migratory corridor and the Laguna Madre Region, as identified in the plan.

According to the Shorebird Conservation Plan, increased development, recreation, and infrastructure resulting from expanding human populations pose the greatest disturbance to shorebird habitat. Indirect impacts to shorebird habitat (beach, washover flats, tidal flats, spoil islands, and shallow water areas) include 1) changes in hydrology adjacent to roads, 2) cumulative impacts of induced development along new road routes, 3) non-point source pollution associated with run-off and accidental spills of hazardous materials, and 4) increased access to shorebird habitats from off-road vehicles (ORVs), or illegal dumping (USFWS 2001).

This plan recognizes Laguna Atascosa NWR as an important shorebird area with the highest numbers of shorebirds (21 percent) detected during aerial surveys along the Texas coast from 1997–1998. The plan lists 39 priority shorebird species such as the snowy plover, piping plover, long-billed curlew, red knot, and the buff-breasted sandpiper that are considered "highly imperiled" as of 2004. Consistent with this plan, the CCP will incorporate conservation measures for shorebirds such as protecting the dune system, washover passes, wind tidal flats, algal flats, and mangrove lagoons, as well as monitoring populations and use areas for

potential disturbance. Per the 1999 Refuge Expansion Plan, additional lands may be added to the Refuge to help protect existing natural habitats that shorebirds depend on such as wind tidal flats, barrier island mudflats, and other habitats.

Western Hemisphere Shorebird Reserve Network

The Western Hemisphere Shorebird Reserve Network (WHSRN) is a voluntary non-regulatory coalition that identifies and promotes conservation of crucial breeding, wintering, or migratory stopover sites for shorebirds. The mission of the WHSRN is: "*...to conserve shorebird species and their habitats across the Americas through a network of key sites*." According to the WHSRN, more than 25 percent of all of North America's shorebirds such as piping plovers, snowy plovers, and Wilson's plover are in serious decline.

In 2001, Laguna Atascosa NWR was officially designated a WHSRN International Site, along with Rancho Rincón de Anacahuitas in Mexico. These sites (out of 63 current sites in eight countries) make up the first bi-national site within the WHSRN. Both Laguna Atascosa and Rancho Rincón de Anacahuitas in Mexico sites host at least 100,000 shorebirds during migration and during the winter. "Members"of each site agree to 1) make shorebird conservation a priority, 2) protect and manage shorebird habitat, and 3) keep WHSRN informed of any status changes to the site. This CCP incorporates strategies that attempt to meet these items.

U.S. Ocean Action Plan (2004)

As part of Oceans Act of 2000 and the U.S. Commission on Ocean Policy, the U.S. Ocean Action Plan recognizes the importance of oceans, coasts, and Great Lakes of the United States and promotes responsible use and stewardship of ocean and coastal resources for the benefit of all Americans. The intent of the plan is to identify immediate, short-term actions that provide direction for ocean policy and to outline additional long-term actions that provide direction for the future. The Service has established guiding principles (June 21, 2007, memo) to implement relevant aspects of this plan through an ecosystem-based management approach. Some of the guiding principles include focusing on the Service mission, executing statutory responsibilities, integrating goals and activities across programs and agencies, providing technical assistance to partners, and managing marine and coastal national wildlife refuges for "wildlife first," along with compatible public uses. This CCP complements these efforts by incorporating relevant priorities, including but not limited to conserving and restoring coastal habitat, enhancing the conservation of marine mammals and sea turtles, strengthening coordination with other agencies, establishing and maintaining excellent partnerships, and monitoring coastal resources within the management area.

Marine Protected Areas (2000)

Marine Protected Areas or MPAs are defined as any area of the marine environment reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein. As such, portions of Laguna Atascosa NWR qualify as an MPA. Executive Order 13158 (65 FR 34909-11) directs Federal agencies to work together with states, territories, tribes, and non-governmental partners to maintain the MPA system and to accomplish a variety of related tasks working with public and private partners. The mission statement of the MPA Center's Strategic Plan (2007) is: "*To facilitate the effective use of science, technology, training, and information in the planning, management, and evaluation of the Nation's system of MPAs.*" The main focus is to ensure that MPAs are coordinated in a larger ecosystem framework to comprehensively protect these natural and cultural resources; through the national system, these sites and programs will benefit by working together to accomplish priorities that could not be achieved alone. Relevant aspects of this plan and executive order (EO) directives are considered in this CCP.

U.S. Department of Agriculture (USDA) - Conservation Reserve Program: Lower Rio Grande Valley Thornscrub Restoration Project; State Areas for Wildlife Enhancement (SAFE) (2008)

This USDA Farm Service Agency initiative is specifically geared towards creating and restoring endangered ocelot habitat in Cameron, Willacy, Hidalgo, and Kenedy counties in southern Texas. Recognizing that over 90 percent of the original thornscrub habitat in the LRGV has been lost by conversion to row crop, orchard agriculture, and urban encroachment, this initiative introduces a conservation practice for private landowners intended to create 5,000 acres of native grasses and thornscrub habitat. Although this is for ocelots, it will also benefit other wildlife such as bobwhite quail, white-tailed deer, and numerous grassland birds. Under this initiative, eligible landowners receive financial incentives to plant native species of grasses and woody shrubs in areas with the greatest potential to restore ocelot habitat and connect known ocelot habitats via wildlife corridors. Partners include the Service, NRCS, TPWD, and non-governmental organizations (NGOs) such as Environmental Defense, TNC, and Valley Nature Center.

Draft Climate Change Strategic Plan and Five-Year Action Plan (2008)

Secretarial Order No. 3226 directs the U.S. Department of the Interior to consider and analyze potential climate change impacts when undertaking long-range planning activities and decision-making for public lands. Recognizing that climate change is one of the greatest environmental and conservation challenges, the Service began development on a Climate Change Strategic Plan and associated Five-Year Action Plan to consider and address the impacts of climate change on fish and wildlife resources. The Strategic Plan envisions efforts in adaptation, mitigation, and education, and provides flexibility for the Service to respond to evolving science, technology, and implementation experience. Coastal refuges, such as Laguna Atascosa NWR, may be most affected by global environmental trends such as climate change and sea level rise.

State Plans and Initiatives

Texas Comprehensive Wildlife Conservation Strategy (2005)

As part of the State Wildlife Grant Program, the Texas Wildlife Conservation Strategy (Texas Wildlife Action Plan) was completed by the TPWD to assist the agency and its conservation partners with the development of non-game initiatives and goals to address the needs of wildlife and habitats. This plan provides detailed species and habitat information on 10 major ecoregions in Texas. Laguna Atascosa NWR occurs within the Gulf Coast Prairies and Marshes Ecoregion. This ecoregion runs along the Texas Gulf Coast and extends inland approximately 60 miles. The Gulf Coast Prairies and Marshes Ecoregion is ranked as a high conservation priority and is considered to be among the most threatened of the 10 ecoregions (TPWD 2005). The plan identified that inland prairies, coastal woodlands, and beach habitats are specifically threatened by increased population growth and associated development. The plan also identifies 297 priority species within this ecoregion. Ninety-seven species are invertebrates; 33 species are State-listed threatened or endangered (*See Appendix C*), and 14 of the State-listed species are also federally-listed as threatened or endangered (*See Appendix B*). Seventy-nine State priority species identified in the Texas Action Plan commonly occur or nest on Laguna Atascosa NWR (*See Appendix A*).

A major focus of the action plan is to provide species and habitat assessments along with conservation strategies. The plan indicates that since Texas is more than 94 percent privately owned, "a strong education program" is also needed to "gain support for general conservation as well as specific projects." High priority conservation actions include vegetation and habitat mapping, biological inventories, data collection and database management, land protection, support of bird joint ventures, land and water monitoring, developing conservation partnerships, and education and outreach activities. Species-specific conservation actions are also included in the plan. Relevant strategies of this CCP and associated step-down management plans will take into account many of the specific conservation actions in the State's plan.

Seagrass Conservation Plan for Texas (1999)

Status and trend information on Texas seagrasses, as documented by Pulich and Roberts (1996) and Quammen and Onuf (1993), indicate significant declines and major conservation and environmental problems affecting the remaining 235,000 acres of Texas seagrasses. Seagrass meadows are unique subtropical habitats of bays and estuaries that play critical ecological roles in the Gulf Coast Ecosystem. Seagrass meadows provide a major organic source that drives coastal food webs, help stabilize coastal erosion and sedimentation, and provide important nursery habitat for fish and other marine life; seagrasses play a natural role in nutrient cycling and water quality processes. Having State management authority or jurisdiction where seagrasses occur, TPWD, Texas General Land Office, and the Texas Natural Resource Conservation Commission (now the Texas Commission on Environmental Quality) have taken the lead in the development and implementation of this plan. The plan focuses on three separate issue categories: Seagrass Research, Management/Policy, and Education/Outreach, including cross-agency coordination and cooperation with Federal agencies. Relevant strategies of this CCP and associated step-down management plans take into account the major issues identified in this plan.

Land and Water Resources Conservation and Recreation Plan (2005)

The Land and Water Resources Conservation and Recreation Plan was written to guide TPWD in conserving the State's natural and historic heritage and in providing public access to the outdoors. Major goals of this plan include:

- improving access to the outdoors;
- conserving, managing, operating, and promoting agency sites for recreational opportunities, biodiversity, and the cultural heritage of Texas;
- assisting landowners in managing their lands for sustainable wildlife habitat consistent with their goals;
- increasing participation in hunting, fishing, boating, and outdoor recreation;
- enhancing the quality of hunting, fishing, boating, and outdoor recreation;
- improving science, data collection, and information dissemination to make informed management decisions;
- maintaining or improving water quality and quantity to support the needs of fish, wildlife, and recreation; and
- continuously improving TPWD business management systems, business practices, and work culture.

According to the Plan, "*…the high population growth and associated development along the coast have fragmented land, converted prairies, changed river flows, decreased water quality and increased sediment loads and pollutants on marshes and estuaries. Projections indicate continued high growth and increasing fragmentation in most parts of this ecoregion.*." The Plan recommends that "...many beach areas and mud flats need additional protection." This CCP incorporates many relevant strategies, both in land and water conservation (e.g., monitoring species status and trends, creating and restoring coastal prairie, public outreach, cultural and historical resource protection, maintaining and developing new partnerships, and managing invasive species); and in recreation (e.g., providing quality hunting, fishing, and other wildlife-dependent recreational opportunities).

State plans closely linked to this plan include the Coastal Erosion Planning and Response Act and the State Water Plan-Region M (2007), which include strategies regarding natural resource issues and management considerations applicable to the Refuge.

Arroyo Colorado Watershed Protection Plan (2007)

The Arroyo Colorado Watershed (ACW) Protection Plan was developed by a coalition of public and private organizations to improve water quality and aquatic and riparian habitat in the Arroyo Colorado. This plan takes into account current uses of the Arroyo such as flood control, navigation, conveyance of municipal and industrial wastewater discharges and irrigation return flows, as well as recreation and environmental uses, and provides actions to restore and protect these uses. The goal of the ACW Protection Plan is *"...to reduce the addition (i.e., loading) of pollutants such as oxygen-demanding substances, nitrogen, phosphorus, and sediment to the Arroyo Colorado and to improve natural habitat to the degree necessary to meet the uses designated by the state of Texas and specified in the State's Water Quality Standards..."* The Refuge participates as a cooperating stakeholder in the ACW Protection Plan as the Arroyo Colorado, originally a distributary of the Rio Grande, flows across the Refuge and into the Laguna Madre.

Federally-listed Species Recovery Plans

Listed Cats of Texas and Arizona Recovery Plan (with emphasis on the Ocelot) - (1990)

Radio-collared ocelot on the Refuge. Photo: USFWS

The recovery plan for the federally-endangered ocelot emphasizes maintaining, protecting, and increasing ocelot populations and distribution in Texas (USFWS 1990a). This includes surveying for ocelots; identifying, protecting, and managing ocelot habitat; developing translocation techniques; and developing an education and information program. Laguna Atascosa NWR is the lead recovery station for the ocelot and is therefore primarily responsible for the implementation of recovery actions. As such, Refuge staff are actively surveying the resident ocelot population; radio tagging and tracking ocelot; conducting serological studies to monitor for disease, contaminants, and genetic health; taking actions to minimize human disturbance to ocelot habitats; encouraging protection of the ocelot and the federally-endangered jaguarundi on private lands; educating the public on the conservation of these rare species; increasing ocelot habitat through restoration; identifying potential habitat sites (for acquisition or protection of blocks of habitat and corridors); and investigating and following up on sighting and mortality reports. The Refuge is also involved in partnerships with local landowners; NGOs; and Federal, State, and local agencies to monitor and protect ocelots and their habitat. In addition, the Refuge is working with other agencies such as TXDOT to help design "cat crossings" to reduce the risk of road kills and also to facilitate habitat connectivity across the roads. The Refuge provides technical assistance with Endangered Species Act consultations and with updating or revising the recovery plan. The Refuge is working with NGOs such as Environmental Defense and TNC to assist in the implementation of recovery actions on private lands.

Ocelot being fitted with a radio collar and checked for diseases. Photo: USFWS

Top recovery priorities for the Refuge in the coming years will focus on:

- addressing the potentially deleterious effects of small population size, population isolation, and loss of genetic diversity in the Cameron County ocelot population;
- protecting existing ocelot habitat and minimizing habitat loss on and in the vicinity of the Refuge;
- restoring, connecting, and increasing the availability of ocelot habitat;
- continuing the long-term monitoring and research of ocelots;
- increasing water availability during times of drought; and
- reducing the risk of ocelot road mortalities.

Aplomado Falcon (1990)

The Aplomado Falcon Recovery Plan (USFWS 1990b) states that "*…suitable habitat in the United States and Mexico should be identified and protected, especially in areas close to reintroduction sites*." Additionally, "*Particular attention should be directed toward suitable habitat on public lands*." Other elements of the recovery plan emphasize a reintroduction program to establish populations in the United States. The criteria for downlisting the

aplomado to threatened is when "*...a minimum self-sustaining population of 60 breeding pairs has been established in the United States*."

Aplomado Falcon Photo: USFWS

In partnership with the Peregrine Fund, a non-profit conservation group based in Boise, Idaho, the first major aplomado falcon releases began in 1993 on the Refuge. The Refuge contains some of the best coastal prairie and savannah habitat for this species, particularly the Bahia Grande Unit. As of 2004, over 900 falcons have been released in the LRGV, and 25 nesting pairs were documented in 2006. The release program in the LRGV and on the Refuge was deemed a success, and efforts have now shifted to west Texas and New Mexico. Monitoring of aplomado falcons continues on the Refuge in order to document nesting and fledgling success and to monitor contaminant levels. Prescribed fire is used to manage for healthy grassland habitat that would benefit the aplomado falcon.

Sea Turtles

Kemp's ridley sea turtle coming ashore to nest. Photo: USFWS

Major actions needed to achieve recovery involve providing long-term protection to important nesting beaches, ensuring hatching success, determining distribution and seasonal movements for all life stages, minimizing mortality from commercial fisheries, and reducing the threat from marine pollution. On the Refuge, the Kemp's ridley, the loggerhead, and green sea turtles nest on the beach. These sea turtles and the hawksbill sea turtle may occur within the bays, beaches, and Gulf of Mexico. The endangered leatherback sea turtle (*Dermochelys coriacea*) was last documented on the Texas coast on Padre Island in the 1930s, but a nest has been recently confirmed near the Refuge on the Padre Island National Seashore in June 2008.

The Refuge contributes to recovery plan tasks for sea turtles primarily through monitoring nesting and stranding, patrolling beaches, protecting nest areas, participating in recovery work groups, and partnering with sister agencies such as the National Park Service's Padre Island National Seashore and private groups such as Sea Turtle, Inc. Nest monitoring includes daily all-terrain vehicle (ATV) beach patrols on Boca Chica Beach and South Padre Island from early April though mid-July, which corresponds with the nesting season of the Kemp's ridley. Monitoring on the Refuge also contributes to recovery plan actions that call for determining the distribution, abundance, and status in the marine environment and in nearshore habitats. The Refuge participates in the Sea Turtle Stranding and Salvage Network, as recommended in these recovery plans. This CCP incorporates, as objectives and strategies, those action items of the sea turtle recovery plans (Kemp's ridley, loggerhead, green, hawksbill, and leatherback sea turtles) as they apply to Laguna Atascosa NWR.

Piping Plover

Because of declines in numbers and breeding sites, piping plover populations became federally-listed in 1986 (50 FR 50726-34). Piping plovers on the Great Lakes were listed as endangered, and Atlantic and northern Great Plains populations were listed as threatened. Piping plovers on migration and in wintering areas (such as at Laguna Atascosa NWR) are

classified as a threatened species. Critical habitat has recently been proposed along the Texas coast and includes South Padre Island (73 FR 29294-29321; May 20, 2008). Piping plovers winter primarily along beaches, sandflats, and algal flats on the Gulf of Mexico. Dredging and recreational development are cited in the recovery plan as serious threats for the species. Some of the actions needed to recover the species include determining current distribution and population trends; protecting, preserving, enhancing piping plover habitat; and implementing public education programs to enhance piping plover conservation. Relevant strategies to help implement these recovery actions for the piping plover are included in this CCP. For Laguna Atascosa NWR, these include protecting their wintering habitat from undue disturbance and impacts resulting from ORV use along the beach, washover passes, and algal flats, primarily in the South Padre Island Unit.

2.5 Planning Perspectives

This comprehensive planning effort will integrate the following perspectives so that management direction during the next 15 years will produce holistic management approaches for Laguna Atascosa NWR.

1. Environmental issues affecting the Refuge such as ecological and wildlife trends, water supply and quality, contaminants issues, invasive species, and alternative energy developments (e.g., wind farms, biofuels).
2. Service policies, mandates, and legal requirements such as appropriate Refuge uses decisions, compatibility determinations, threatened and endangered species considerations, migratory bird conservation, wildlife and habitat management, and staffing.
3. Refuge public use and trends, public involvement in the planning process, environmental education and outreach, interjurisdictional and interagency cooperation, strategic habitat conservation approaches, partnerships, and research needs.

2.6 Planning Issues

The following is a list of major issues and challenges, not necessarily in priority order, associated with current Refuge management. While not an exhaustive list, the questions listed for each issue are some of the major concerns identified during the scoping process. These concerns are addressed in *Section 4.0 - Management Direction.*

Issue 1. Threatened and Endangered Species Management

Laguna Atascosa NWR provides habitat for the endangered ocelot, jaguarundi, northern aplomado falcon, and brown pelican, as well as threatened and endangered sea turtles and shorebirds. Issues include:

- What are the additional actions that need to be taken to benefit threatened and endangered species?
- Which areas should become priorities for potential acquisition or for the development of conservation agreements, particularly where there are inholdings within or between Refuge tracts for endangered species conservation and protection?
- What are future research needs for listed species?

Issue 2. Wildlife Management

Additional inventory and monitoring efforts are needed for more comprehensive population assessments of priority and focal species (*See Sections 3.2.7 and 3.2.8*), particularly at the Bahia Grande and South Padre Island units. The additional inventory and monitoring will help integrate and better direct wildlife and habitat management activities to benefit priority and focal species.

- What are the wildlife populations, distribution trends, and potentially adverse impacts on wildlife at the Bahia Grande, Coastal Corridor, and South Padre Island units and other tracts?
- What surveys and monitoring projects are top priorities on the Laguna Atascosa Unit, Bahia Grande Unit, Coastal Corridor Unit, and South Padre Island Unit?
- What other species and/or communities are priorities for management on the Laguna Atascosa Unit?
- What are future research needs for Federal trust species and other priority or focal species?
- What are the potential impacts of wind farms offshore of the South Padre Island Unit?

Issue 3. Habitat Management and Restoration

Habitat management programs on the Refuge are geared towards enhancement of the ecological integrity of biotic communities within the larger Texas Gulf Coast Ecosystem. These efforts are also consistent with Refuge purposes and the conservation of important fish and wildlife resources such as Federal trust species, and priority and focal species.

- What are the primary management and restoration needs on the Laguna Atascosa Unit? Bahia Grande Unit? Coastal Corridor Unit? South Padre Island Unit?
- What invasive plant species occur on the Refuge, and what are the top priorities for management?
- What are the habitat management research priorities on the Refuge?

Issue 4. Wetland Management and Restoration

The quality and quantity of wetlands on the Refuge are extremely important to a variety of wildlife, particularly waterfowl and other migratory birds. The numerous impoundments, resacas, ponds, potholes, and drainages have the capability of incorporating an integrated water management regime. Freshwater is usually in short supply and the Refuge is almost completely dependent on rainfall. Issues include:

- What are the primary wetland and water management and restoration priorities?
- How can the Refuge maximize the available freshwater and increase the freshwater supply for wildlife use, including adding more tanks, ponds, and obtaining water from the irrigation districts?
- Given the high evaporation and distribution costs of river water, what mechanisms are available to make it feasible for the Refuge to purchase water?
- What are the long-term wetland management and restoration goals on the Bahia Grande Unit for the large estuarine basins and freshwater wetlands?

Issue 5. Land Protection and Acquisition

One of the key elements of wildlife and habitat conservation in the LRGV involves acquiring or otherwise protecting important land tracts that either contain natural vegetation representative of the Valley's native biotic communities or that can be used to connect

important habitat units. Many of these lands are found along the river or resacas, or they exist as old pastures or agricultural fields that can be revegetated or restored for wildlife. In addition, working in partnership with non-governmental agencies (e.g., TNC, The Conservation Fund, National Audubon Society (Audubon), private landowners, or other agencies such as irrigation districts, can also help accomplish land protection objectives. To meet important long-term recovery goals for the ocelot, wildlife corridors and large land tracts are needed to allow for genetic exchange between ocelots at Laguna Atascosa NWR with ocelots along the river, in Mexico, and in the ranch country of Willacy and adjacent counties. The approved acquisition boundary for Laguna Atascosa NWR, which is the lead recovery station for ocelots, is limited to small portions of eastern Cameron County. This limits the Refuge's ability to create the wildlife corridors necessary for the recovery of the ocelot. However, the approved acquisition boundary for the Lower Rio Grande Valley NWR encompasses the four-county area of the Valley, and a primary objective of the Lower Rio Grande Valley NWR is to create wildlife corridors *(See Section 2.4)*. Therefore, a coordinated land acquisition effort between the Refuge and Lower Rio Grande Valley NWR would help meet important recovery plan goals for the ocelot, as well as to connect refuge tracts for the mutual benefit of the fish, wildlife, plants, and their habitats on each refuge.

- What lands should be priorities for acquisition that can provide additional habitat and/or provide important connecting links between disjunct tracts, such as connecting the Bahia Grande Unit to the Laguna Atascosa Unit?
- For the Refuge to meet important recovery goals for the ocelot, should the Lower Rio Grande Valley NWR's current and future land acquisition goals include priorities for completing wildlife corridors that would connect LRGV NWR tracts with Laguna Atascosa NWR tracts, which would be complementary to each refuge's vision?
- What should the priorities and strategies be for acquiring inholdings at the South Padre Island Unit?

Issue 6. Cultural Resources Management

The area surrounding Laguna Atascosa NWR has a rich history of Native American use and Spanish exploration, as well as historic involvement in the Mexican War, the Civil War, and World War II. Interpreting the area's history and protecting important archaeological sites and cultural resources on the Refuge will allow the public to learn more about this history and the connection between people and the land.

- What actions should be taken to better understand and protect cultural and historical resources on the Refuge?
- What is the most effective way to interpret the Refuge's cultural resources?

Issue 7. Interagency Coordination and Partnerships

Strengthening existing partnerships while developing additional partnerships is a vital part of improving the quality of the Refuge experience and appreciation for the Refuge's natural resources, as well as achieving the Refuge's vision. Issues include:

- How can interagency coordination be improved at the Federal, State, and local levels, particularly regarding management and law enforcement on the Bahia Grande and South Padre Island units?
- What additional partnerships should be established to benefit wildlife, increase support for the Refuge, and improve the quality of the visitor's experience?

- How can current partnerships be improved for the benefit of the Refuge, its wildlife, andvisitor enjoyment?
- How can the Friends of Laguna Atascosa NWR group provide additional support to accomplish CCP goals?

Issue 8. Visitor Services, Environmental Education, and Outreach

The Refuge is nationally recognized as a significant birding hotspot and is becoming well-known as a significant butterfly watching area to observe rare and uncommon butterflies. Laguna Atascosa NWR has a locally-popular hunting program for white-tailed deer and exotics (e.g., feral hog). Birding, photography, hunting, and fishing currently attract between 210,000 and 250,000 visitors annually on the Laguna Atascosa Unit where visitor service facilities exist. These numbers do not reflect visitation to the other Refuge units where visitor service facilities do not exist. Protecting natural resources, while allowing for anticipated increases in public visitation, will be a major challenge. Issues include:

- What types of environmental education and interpretation should be implemented, especially on the Bahia Grande and South Padre Island units?
- What types of visitor service facilities should be developed on the Bahia Grande and South Padre Island units?
- Should the Refuge provide signage, brochures, and other outreach materials for Spanish-speaking visitors?
- How do we make our visitor services facilities and programs more accessible?
- What types of recreational wildlife-dependent activities (priority public uses) would be appropriate for each Refuge unit?
- What types of new facilities and improvements to existing facilities are needed to improve the visitor experience and public safety during the next 15 years?
- What types of permanent signage or boundary markers are needed to ensure each Refuge tract is adequately marked to identify boundaries and authorized uses? Additionally, how can Refuge tracts on the South Padre Island Unit be properly marked to identify areas open to the public, since most Refuge tracts on this unit are poorly marked or not marked at all?

Issue 9. Regional Transportation Issues Affecting the Refuge

Due to the rapid pace of development in the LRGV, many existing highways and roads in the vicinity of the Refuge have been improved and expanded. New transportation routes have also been proposed to address increasing population demands of the area. As the Refuge expands and roads and highways are continually improved and built to meet regional transportation needs, many of these would affect Refuge resources. In general, roadways pose significant barriers to wildlife movement (i.e., wildlife corridors) and promote further land development in and around the Refuge.

- How can the Refuge better coordinate with State and county road planners to address important Refuge concerns such as the condition of the roads leading to the Refuge?
- How will the undeveloped Park Road 100 right-of-way that bisects tracts on the South Padre Island Unit affect this unit?
- How will a proposed South Padre Island Second Access Project by the Cameron County Regional Mobility Authority affect the Refuge, and—more specifically—the Coastal Corridor Unit?

- Over the long term, how effective will the 11 wildlife crossings be in reducing the risk of ocelot road mortality and other collisions between wildlife and automobiles along the expanded FM 106 roadway?
- How can the Service work with partners, FHWA, and TXDOT to construct viable wildlife crossings at U.S. 77/83 to facilitate the Ranchito Corridor, North Valley Corridor, RanchlandCorridor, and Boca Chica Corridor connections for wildlife connectivity between tracts of the Lower Rio Grande Valley and Laguna Atascosa NWRs?
- How will the proposed Interstate 69 transportation corridor (currently U.S. Highway 77) affect connecting wildlife corridors (e.g., the North Valley Corridor) between tracts of the Lower Rio Grande Valley NWR and Laguna Atascosa NWR?
- Is there a need for additional wildlife crossings on existing major highways such as SH 100?

Issue 10. Staffing and Funding Needs

Additional staff and funding will be needed to implement new or expanded programs to accomplish CCP goals for the Refuge, especially on the Bahia Grande and South Padre Island units.

- What level of staffing and funding is required to achieve the goals and objectives of this plan?
- Is current staffing and funding adequate to meet the long-term goals of the CCP?
- How can the Refuge expand its volunteer and intern programs to help meet staffing and funding shortages?

2.7 Expected Planning Outcomes

The following outcomes should result from this comprehensive conservation planning effort:

1. Ensure that management of Laguna Atascosa NWR reflects the policies and goals of the Refuge System and the purposes for which the Refuge was established.
2. Identify the types and locations of compatible Refuge uses.
3. Ensure that Laguna Atascosa NWR contributes to the goals of the Texas Gulf Coast Ecosystem and incorporates applicable elements of the relevant plans or initiatives, as outlined in *Section 2.4*.
4. Provide a "vision" of desired future conditions for Laguna Atascosa NWR and goals, objectives, and strategies needed to achieve those conditions.
5. Cooperate with other agencies, organizations, stakeholders, and partners on current and future projects that may affect the biological resources of Laguna Atascosa NWR.
6. Provide an effective approach for budget requests for operational, maintenance, and capital development programs on the Refuge. This CCP can help in obtaining funding for Refuge projects and programs by clearly outlining long-term Refuge needs in advance.
7. Provide timelines and priorities for plan implementation on Laguna Atascosa NWR.
8. Provide long-term management direction of the Refuge, despite staff changes.

9. Inform the public of the long-term plans of the Refuge, and seek public and State participation in the planning process.

2.8 Planning Process and Public Involvement

The CCP planning process consists of the following eight steps. Some of the steps may be repeated, and/or more than one step can occur at the same time.

- Preplanning - form a core team and identify needs
- Identify issues and develop vision - public input is gathered on issues
- Develop goals and objectives - compiled from issues, resource partnerships, legal responsibilities
- Develop and analyze alternatives, including the proposed action
- Prepare draft plan and National Environmental Policy Act (NEPA) document - assess environmental effects and public comments
- Prepare and adopt final plan
- Review and revise plan

To begin the CCP process, a comment period notification was published in the *Federal Register* on July 19, 2004 (69 FR 43010-11). Draft documents and other relevant information for public review was made available at the Refuge headquarters. Internal pre-planning meetings were held at the Refuge in February and June, 2004, to discuss concerns, issues, and opportunities for the future of the Refuge. Four "open house" public scoping meetings were held between February 28 and March 8, 2005, at Raymondville, Brownsville, Harlingen, and South Padre Island to solicit initial public input and involvement during the early stages of CCP development. The TPWD was also invited to participate as a partner in the planning process on April 12, 2004. All comments received from the public were reviewed and considered throughout the CCP process. These comments will be addressed in the final CCP.

The CCP will guide management of the Refuge during the next 15 years. Plans are signed by the regional director, Region 2, thus providing regional direction to the Refuge manager and staff. Copies of the CCP will be provided to all interested parties when requested. Whenever there is a significant need, or at least every 5 years, the Refuge manager will review the plan and decide if a revision is necessary.

3. Refuge Resources

View of the lower Laguna Madre along Bayshore Drive. Photo: USFWS

Laguna Atascosa NWR is a unique blend of temperate, subtropical, coastal, and Chihuahuan desert habitats. Mexican plants and wildlife reach their northernmost limits here, while migratory birds stop to rest and feed during the spring and fall. This combination makes Laguna Atascosa NWR world famous for its mix of birds and other wildlife. Nine federally-listed endangered or threatened species (ocelot, jaguarundi, northern aplomado falcon, brown pelican, piping plover, and the green, hawksbill, loggerhead and Kemp's ridley sea turtles) are known to occur on the Refuge. Approximately 450 plant, 415 bird, 42 mammal, and 44 reptile and amphibian species have been recorded on the Refuge.

Refuge topography is typical of the Texas Coastal Plain, which is basically flat with a slope toward the Laguna Madre at about 17 inches per mile. The highest elevations at Laguna Atascosa occur on "lomas" (natural silty clay mounds), reaching heights from 20 to 36 feet, yet the majority of the Refuge is less than 10 feet above mean sea level. The landscape of the Refuge consists of an irregular pattern of meandering resacas, brushy lomas, coastal salt prairie, tidal flats, sand dunes, freshwater and estuarine wetlands, and impoundments.

3.1 Habitats

The following contains a summary of the typical vegetation types, associated species, and habitat acreage. See Appendix A for a complete list of plants and corresponding scientific names and Appendix I (vegetation map).

3.1.1 Wetlands

Bahia Grande Wetlands. Photo: USFWS

The Refuge has almost 55,000 acres of wetland habitats, ranging from freshwater to mostly brackish or salty. With the exception of the open waters of the Gulf of Mexico, three wetland types make up Laguna Atascosa NWR:

1. estuarine wetlands are tidally-influenced and semi-enclosed by land but have partly obstructed or sporadic access to the ocean and are occasionally diluted by freshwater runoff;

2. lacustrine wetlands are generally deep, open water habitats situated in topographic depressions or dammed river channels, greater than 20 acres in size, and lacking trees, shrubs, or persistent emergent vegetation; and
3. palustrine wetlands are non-tidal wetlands dominated by trees, shrubs, and other persistent emergent vegetation. It also includes wetlands lacking such vegetation, but having less than 20 acres, lacking a wave-formed shoreline, a water depth less than 6.6 feet, and low salinity (Cowardin *et al.* 1979).

The largest wetland feature on the Refuge is the expansive estuarine system along the lower Laguna Madre boundaries. Water regimes are affected by tides, rainfall, freshwater runoff, evaporation, and wind, which create the unique hypersaline conditions found in the Laguna Madre. These conditions have created a rich resource of fish, shellfish, algal mats, bird colonies, migratory bird wintering and staging areas, and seagrass beds. Thus, it is one of the most productive estuarine systems in the United States (Jones 1999). A recent addition of estuarine habitat to the Refuge was the flooding of the Bahia Grande in 2005. Historically, a productive shrimp, oyster, fish, and crab nursery, with bird nesting islands, the Bahia Grande wetland system (about 10,000 acres), was cut off from the Laguna Madre in the mid-1930s with the construction of the Brownsville Ship Channel. About 22,600 acres of shallow, tidally-influenced wetlands occur on the Refuge. Common vegetation found in or on the margins of these wetlands are shoregrass (*Monanthochloe littoralis*), saltwort (*Batis maritima*), glasswort (*Salicornia bigelovii*), shoalgrass (*Halodule beaudettei*), and manateegrass (*Syringodium filiforme*).

Laguna Atascosa Lake. Photo: USFWS

The landscape of the Laguna Unit has many lacustrine wetlands. A main lacustrine wetland feature is the 5,000-acre impoundment system known as Laguna Atascosa (which means "muddy lagoon") and includes the Upper Cayo Atascosa and the Laguna del Cayo. This wetland system contains fresh to brackish permanent water with a maximum depth of about four feet. Inflows to this system are from agricultural runoff and rainfall. Another large lacustrine wetland, Pelican Lake, does not contain permanent water. However, following heavy rains it may hold up to 1,000 surface acre-feet of water. The Resaca de los Cuates normally contains about 500 acres of impounded water. Depths vary considerably, from a few inches to six feet. Water in the resaca system may be obtained through an irrigation district but is normally filled through rainfall and surface water runoff. Other wetlands included in the lacustrine systems are large ponds or impoundments, such as Laguna de los Patos, Bayside Lake, Moranco Blanco Impoundment, Pintail Pond, and

Alligator Pond on the Laguna Atascosa Unit. Photo: USFWS

Horseshoe Lake, which collectively account for approximately 500 acres of seasonally flooded wetlands.

Many palustrine wetlands are scattered throughout Laguna Atascosa NWR. These consist of the pothole wetlands, ephemeral ponds, resacas, inter-dunal ponds, coastal prairie wetlands, old stock tanks, small impoundments, and coastal marshes. These wetlands are extremely important to wildlife, as they are the only source of freshwater on the Bahia Grande and South Padre Island units. Common vegetation found in or on the margins of these wetlands are saltwort, glasswort, sea ox-eye daisy, Gulf cordgrass, and cattails.

South Padre Island Unit beachfront. Photo: USFWS

3.1.2 Beaches, Dunes, and Tidal Flats

There are over eight miles of beachfront on the South Padre Island Unit. Padre Island has been cited as the longest barrier island in the world (Britton and Morton 1989) and is continually being reshaped by wind, wave, and current action. The barrier island habitats transition from sandy beaches along the Gulf shore, moving inland to the sharp rises of the Gulf dune lines, progressing onto the inter-dunal area (deflation plain), and terminating with broad mudflats or wind tidal flats bordering the Laguna Madre. In some places, Gulf dune lines can reach over 30 feet high. The inter-dunal area and mudflats make up about 80–90 percent of the area behind the Gulf dune lines and is mixed with grassy cover, smaller dunes, slightly larger back island dunes, brackish marshes and ephemeral freshwater ponds. Typical vegetation includes cattails, sea oats (*Uniola paniculata*), cordgrass (*Spartina spp.*), bulrushes (*Scirpus spp.*), sedges (*Cyperus spp.*), spikerushes (*Eleocharis spp.*), and railroad vine (*Ipomoea pes-caprae var. emarginata*). Soils on the higher elevations contain pure sand, which gradually mixes with clay in the lower elevations towards the Laguna Madre.

Coastal Prairie on the Refuge. Photo: USFWS

Sea oats on the dunes. Photo: USFWS

3.1.3 Coastal Prairie and Savannah

Laguna Atascosa NWR contains about 19,800 acres of coastal prairie and savannah habitat, which is the second most prevalent habitat type on the Refuge. The Refuge's prairies are dominated by Gulf cordgrass (*Spartina spartinae*). Generally, two grassland habitat types are delimited by soil salinity and elevation. The first type is the "*salt-prairie,*"which is at or near sea level, and includes salt-tolerant plants such as leatherleaf (*Maytenus phyllanthoides*),

seepweed (*Sueda linearis*), glasswort, saltwort, shoregrass, sea ox-eye daisy (*Borrichia frutescens*), and sea lavender (*Limonium nashii*). On slightly higher elevations, the second type contains Gulf cordgrass (*Spartina spartinae*), which may be interspersed with woody vegetation such as trecul yucca (*Yucca treculeana*), honey mesquite (*Prosopis glandulosa*), and pricklypear cactus (*Opuntia engelmannii var. lindheimeri*) to form a savannah. Mixed stands of huisache (*Acacia farnesiana*), retama, and mesquite often extend into the grassland or brushland margins. These higher elevation grasslands, from 6 to10 feet above sea level, may also contain a prevalence of grasses such as seashore paspalum (*Paspalum vaginatum*), seashore dropseed (*Sporobolus virginicus*), and various bluestem species. However, many of these native grasslands have been dominated by invasive species such as Bermuda grass (*Cynodon dactylon*), guineagrass (*Panicum maximum*) and buffelgrass (*Pennisetum ciliare*). In south Texas, the coastal prairie and savannah provides essential foraging and nesting habitats for the endangered northern aplomado falcon.

Coastal Prairie on the Refuge. Photo: USFWS

3.1.4 Brushlands and Lomas

Although many early writers alleged widespread brush encroachment into the southern Texas coastal grasslands (e.g., Cook 1908); this notion has since been challenged by later, more comprehensive studies, as seen in Johnston (1955, 1963). Johnston (1963) stated that *the "...plains and low hills of extreme southern Texas and Tamaulipas were covered by more or less dense growths of shrubs and low trees..."* According to Inglis (1964), native brush habitat once extended as far as 30 miles on either side of the Rio Grande. Brushlands are the upland forested habitats represented at Laguna Atascosa NWR. Brushland occupies about 11,400 acres of the Refuge, which are generally well drained soils and not normally flooded. These areas are dominated by woody vegetation with 50 percent or more canopy cover. A unique brushland habitat type occurs on the Refuge's lomas because of their higher elevations and variations in soil salinity, which result in differing vegetational zones on the same loma. Clover (1937) describes the brushland vegetation of the lomas of eastern Cameron County as "islands" of chaparral and mesquite. Common brushland vegetation includes granjeño or spiny hackberry (*Celtis pallida*), brasil (*Condalia hookeri var. hookeri*), coyotillo (*Karwinskia humboldtiana*), retama (*Parkinsonia aculeata*), Texas ebony (*Pithecellobium flexicaule*), huisache, yucca, prickly pear cactus, and colima (*Zanthoxylum fagara*). The understory includes brush such as whitebrush (*Aloysia gratissima*), snake eyes (*Phaulothamnus spinescens*), cenizo (*Leucophyllum frutescens*), and Texas lantana (*Lantana horrida*). The

Laguna Atascosa's brushland habitat. Photo: USFWS

understory of some brushland habitats (e.g., mesquite woodlands) are dominated by invasive grasses due to past disturbance. On the open, grassy portions of the lomas, two rare plants found only on the lomas are lila de las lomas (*Echeandia texensis*) and lila de los llanos (*Echeandia chandleri*). In 1999, *E. texensis* was recognized as a distinct species known only from historic collections from the Refuge and nearby Green Island (Cruden 1999). However, the spread of invasive grasses such as buffelgrass and guineagrass threaten these rare plant communities. The brushlands on the lomas are essential to the survival of the endangered ocelot, as well as providing protective roosting habitat for aplomado falcons.

See Appendix A for a complete list of plants and corresponding scientific names.

3.1.5 Invasive Plant Species

Buffelgrass, guineagrass, Brazilian peppertree (*Schinus terebinthifolius*), and saltcedar (*Tamarix aphylla*) are of particular concern on Laguna Atascosa NWR. The Refuge has conducted limited control of buffelgrass and other invasive plants along roads and trails. Saltcedar has been mechanically controlled on Refuge levees and dikes, and cattails (*Typha domingensis*) have been controlled with prescribed fire. The spread of these invasive species and potential exacerbation by management activities like prescribed fire will need to be monitored to assess future threats and control measures.

See Appendix A for a listing of invasive plants that occur or may occur on the Refuge.

3.2 Fish and Wildlife

The unique combination of temperate, subtropical, desert, and coastal habitats that converge at the Refuge makes it one of the best areas in the United States to see a variety of wildlife. Over 450 identified plants, 415 recorded bird species (more than any other national wildlife refuge), 45 types of mammals, 44 reptile and amphibian species, and about 40 fish species are known to occur on the Refuge. *See Appendices A–C.*

3.2.1 Mammals

There are 45 resident mammal species known to inhabit the Refuge. Mammals commonly seen on the Refuge include white-tailed deer, coyote, bobcat, collared peccary (javelina), and eastern cottontail rabbits. Other rarer or less obvious mammals include ocelot, raccoon, grey fox, long-tailed weasel, Mexican ground squirrel, nine-banded armadillo, bats, and various rodent species. The Refuge population of white-tailed deer is healthy and stable, and good deer habitat is abundant, primarily on the Laguna Atascosa Unit. Deer can often be seen in the coastal prairies, along wooded or brushy areas of the auto tour routes, and along the access roads near the Refuge headquarters. Feral hogs (*Sus scrofa*) and exotic nilgai antelope (*Boselaphus tragocamelus*) also occur on the Refuge and are considered pest species.

See Appendix A for a complete list of mammals and corresponding scientific names.

3.2.2 Birds

Birds are the most varied wildlife group on the Refuge, with 415 recorded species and 95 nesting species. This is the highest number of birds recorded on any national wildlife refuge, which makes Laguna Atascosa one of the top ten birding "hotspots" in the nation. Laguna Atascosa

Great Kiskadee. Photo: Carlos Fiol

NWR thrives with migratory, wintering, and nesting waterfowl, shorebirds, and songbirds each year.

The Refuge is strategically located on the southern end of the Central Flyway and is a major stopover point on the lower Texas coast for waterfowl going to and from Mexico. More waterfowl winter here than any other place on the lower Texas coast. From September through March, thousands of ducks can be found on the Refuge. In November alone, when peak use occurs, over 250,000 ducks are on the Refuge and thousands more are on the Laguna Madre adjacent to the Refuge. Commonly seen waterfowl include redheads, pintails, greater white-fronted geese, and snow geese. In fact, the majority of redhead ducks in the United States winter at or near Laguna Atascosa NWR. The Refuge's cordgrass habitat provide important nesting areas for mottled ducks. Mottled duck populations have been declining in Texas over the past several decades and are a focal waterfowl species on the Refuge.

Roseate spoonbills. Photo: Carlos Fiol

In 2001, Laguna Atascosa NWR was officially designated a Western Hemisphere Shorebird Reserve Network (WHSRN) site, along with Rancho Rincón de Anacahuitas in Mexico. These sites make up the first bi-national site within the WHSRN that, together, host at least 100,000 shorebirds annually. Five species of shorebirds are known to nest here: snowy plover, Wilson's plover, kildeer, black-necked stilt, and American avocet. With the exception of the Laguna Madre shoreline, more than 38,000 acres (about 40 percent) of Laguna Atascosa NWR are comprised of wetlands and mudflats, making it a significant wintering and migratory stopover and a major shorebird and waterbird breeding area. The South Padre Island Unit supports the highest numbers of breeding pairs for snowy and Wilson's plovers in the lower Laguna Madre region (Zdravkovic and Hecker 2004).

In 1993, the aplomado falcon re-introduction program began with the first large-scale releases occurring on the Laguna Atascosa Unit. The Refuge's coastal prairie, savannah, and marshes offer some of the best aplomado falcon habitat. The re-introduction in south Texas has been deemed a success, and pairs of released birds and their offspring regularly nest and reside on the Bahia Grande and Laguna Atascosa units. Padre Island is also well-known for hosting large concentrations of fall and spring migrating peregrine falcons (Hunt *et al.* 1975, Earthspan 2003). It is an internationally important staging area for these falcons.

In addition to waterfowl, shorebirds, and raptors, the Refuge is a vital migratory stopover for Neotropical songbirds, particularly during spring migration, when these birds are more concentrated on the Refuge. The Laguna Atascosa and South Padre Island units are important "fallout" areas for Neotropical passerine birds moving northward in the spring. Typical Neotropical passerines include indigo bunting, painted bunting, blue grosbeak, orchard oriole, Bullock's oriole, various warblers, vireos, tanagers, flycatchers, kingbirds, and hummingbirds. The passage of strong cold fronts during the spring migration can cause thousands of Neotropical songbirds to fallout on the Refuge to seek shelter from the strong winds and food to fuel their northward journey. These events make excellent opportunities to see thousands of songbirds concentrated in a small area.

Migrating and Wintering Birds

The Flyway System was initiated in 1948 to allow for differing regulations relating to individual waterfowl populations migrating through each "flyway." The term "flyway" has long been used to designate the migration routes of birds. For management purposes, four flyways (Pacific, Central, Mississippi, and Atlantic), were established in the United States (*See Figure 7*). The Refuge is located within the southern end of the Central Flyway, which in totality forms an extensive geographical area that reaches from Alaska and central arctic Canada to South America. Being along the coastline, some migrating birds are "funneled" through Laguna Atascosa NWR from the Mississippi Flyway as well.

The management objectives of Laguna Atascosa NWR contribute to those of the Central Flyway Management Program. The Refuge fulfills the purpose of its establishment by providing quality winter habitat to sustain high numbers of migratory bird populations, particularly waterfowl and shorebirds, as well as raptors such as peregrine falcons. South Padre Island is a significant staging area for migrating peregrine falcons, as the majority of these falcons pass through the island on their way from arctic nests to Mexico, the Caribbean, and Central and South America each year. Although there are many outside factors influencing the bird use of the Refuge, maintaining the health and condition of important stopover and winter habitat positively affects their migrational and reproductive successes each year.

See Appendix A for a complete listing of birds and corresponding scientific names found on the Refuge.

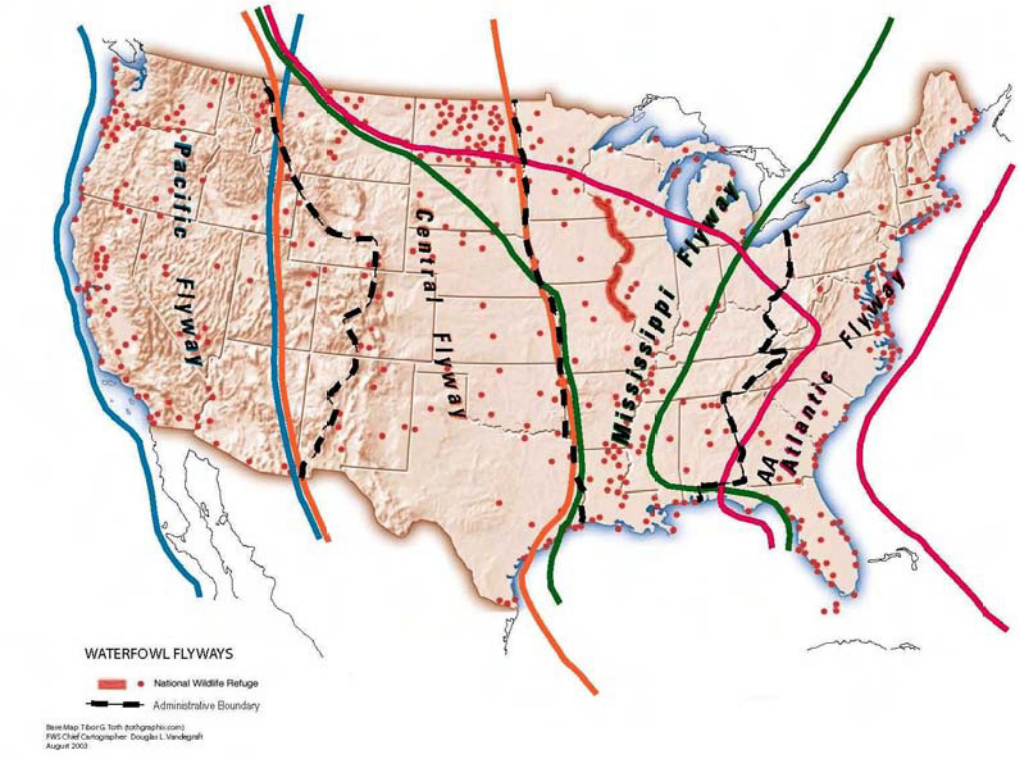


Figure 7. Waterfowl Flyways and National Wildlife Refuges

3.2.3 Reptiles and Amphibians

At least 44 species of reptiles and amphibians are known to inhabit Laguna Atascosa NWR. Being in a semi-tropical area, the Refuge hosts a variety of interesting herpetofauna. Typical species that may be seen on the Refuge include Texas tortoise, six-lined racerunner lizard, bullsnake, and red-eared slider turtles. Rarer species include the sea turtle, American alligator, coral snake, Texas indigo snake, Texas horned lizard, Rio Grande leopard frog, Texas spiny softshell turtle, Rio Grande lesser siren, and black-spotted newt.

American alligator. Photo: USFWS

See Appendix A for a complete listing of reptiles and amphibians and corresponding scientific names found on the Refuge.

3.2.4 Fishery Resources

About 40 species of fish occur on Laguna Atascosa NWR, ranging from freshwater and brackish water species to saltwater species. The predominant fish species found on the Laguna Atascosa and Bahia Grande units either in upland freshwaters or in the tidal areas of the Laguna Madre are alligator gar (*Atractosteus spatula*), gizzard shad (*Dorosoma cepedianum*), blue catfish (*Ictalurus furcatus*), Gulf killifish (*Fundulus grandis*), and sheepshead minnow (*Cyprinodon variegatus*). Other fish species include spotted gar (*Lepisosteus oculatus*), carp (*Cyprinus carpio*), striped mullet (*Mugil cephalis*), red drum (*Sciaenops ocellatus*), black drum (*Pogonias cromis*), spotted seatrout (*Cynoscion nebulosus*), silverside minnow (*Menidia beryllina*), and sheepshead minnow (*Cyprinodon variegatus*).

See Appendix A for a complete listing of fishery resources and corresponding scientific names found on the Refuge.

3.2.5 Invertebrates

Invertebrates, particularly insects, have the highest known numbers of species of any animal group at well over 900,000 (Barnes 1987). Invertebrates are a critical part of the food web and play important ecological roles such as in nutrient cycling, energy transfer, and plant reproduction. Snails, crustaceans, and insects are the most important invertebrate groups for breeding ducks. Worm-like midge larvae are especially important to waterfowl and occur in aquatic vegetation and in all types of wetlands (Eldridge 1990). Snails (Gastropoda) can be good indicators of overall ecosystem health, since they usually require relatively uncontaminated wet environments. Shorebirds are highly dependent on invertebrate food items (copepods, midges, worms, and mollusks) during their migration, feeding on small invertebrates found in mudflats, on Gulf beaches, and on the shorelines and in shallow waters of other wetlands. Common aquatic

Blue metalmark. Photo: Ellie Thompson

invertebrates on the Refuge include water bugs (Hemiptera), crayfish, and fiddler crabs. Terrestrial invertebrates such as damselflies and dragonflies (Odonata) are common on the Refuge, as well as mosquitoes and midges (Diptera), beetles (Coleoptera), and moths and butterflies (Lepidoptera). Some migratory and resident birds, including songbirds and Neotropical migrants, are highly dependent on insects as their primary food source. On the Refuge, these birds include loggerhead shrikes, woodpeckers, paraques, nighthawks, kingbirds, and orioles.

The Refuge visitor center has on display a butterfly garden containing important butterfly host plants such as cenizo, croton, and milkweed, and nectar plants such as lantana, eupatorium, and white plumbago (*Plumbago scandens*). Some uncommon or rare butterfly species on the Refuge include the Blue metalmark, Xami hairstreak, Clytie ministreak, and Theona checkerspot. An extremely rare species, Xami hairstreak (*Callophrys xami*) has recently been found on the Bahia Grande Unit (2007), and in prior years on the Laguna Atascosa Unit. This rare butterfly depends on a single host plant, coastal stonecrop (*Sedum texana*), which is found only in a few isolated areas of the Refuge. Other notables seen throughout the year are great southern whites, giant swallowtails, and whirlabouts. To date, over 128 species of butterflies have been documented on the Refuge, most of them at the visitor center's butterfly gardens.

See Appendix A for a complete listing of butterflies and corresponding scientific names found on the Refuge.

3.2.6 Federally-listed Species

A major purpose of the Endangered Species Act (ESA) is to *"...conserve the ecosystems upon which endangered and threatened species depend..."* and to provide a program for the conservation and recovery of listed species. Under the law, species may be listed as either "endangered" or "threatened." Endangered means a species is in danger of extinction throughout all or a significant portion of its range. Threatened means a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pests, are eligible for listing as endangered or threatened. Proposed species means any species of fish, wildlife, or plant that is proposed in the *Federal Register* to be listed under the ESA. *See also: Appendix B*.

Species declines resulting in their additions to the threatened and endangered species lists are often related to habitat loss and fragmentation. Approximately 95 percent of the native habitat in the LRGV has been converted for agricultural or urban development. Ranching and farming, oil and gas development, beach development, road building, housing and other urbanization, irrigation and drainage systems, and/or land clearing contribute to habitat loss or alteration. Laguna Atascosa NWR provides essential habitat for some of the most endangered species in the United States. Nine federally-listed species (ocelot, jaguarundi, northern aplomado falcon, piping plover, brown pelican, and the Kemp's ridley, loggerhead, green, and hawksbill sea turtles) depend on the Refuge on a regular or seasonal basis. There are no federally-listed plants currently known to occur on Laguna Atascosa NWR.

Ocelot. Photo: USFWS

Ocelot (*Leopardus pardalis*) - The ocelot is a medium-size spotted cat that ranges from southern Texas to northern Argentina in humid, tropical and subtropical forests, coastal mangroves, swampy savannas, and semi-arid thornscrub (USFWS 1990a). The ocelot was listed as endangered (without critical habitat) in 1972 due primarily to over-collection for the fur trade and habitat loss (37 FR 2589). These primarily nocturnal cats usually feed on small mammals and birds and require large home ranges. The ocelot prefers dense thornscrub or brush occurring along riparian areas, drainages, lomas, and other uplands, but it has also been found in other dense habitats such as live oak forest with brushy understory. Optimal habitat consists of dense thornscrub with 95 percent or more canopy cover (USFWS 1990a), although they also use less dense habitats for foraging and dispersal. Laguna Atascosa NWR supports the largest known United States population of these rare and endangered cats, and there is approximately 9,000 to 11,000 acres of suitable habitat on the Laguna Atascosa Unit. Current estimates indicate fewer than 50 ocelots remain in the United States (all in southernmost Texas), and about 10–25 occur on and adjacent to the Laguna Atascosa Unit of the Refuge (Jody Mays, personal communication 2009).

Road kills are the primary cause of direct mortality to the remaining ocelot population as urbanization, road construction, and other development in the LRGV area has recently increased. Habitat loss and fragmentation was and still is a major reason for their endangered status. Long-term survival of this species depends not only on the protection of large densely-vegetated brushlands or other suitable habitats and safe wildlife corridors between them, but also on addressing the small population sizes, population isolation, and loss of genetic diversity. According to Haines *et al.* (2006), a population viability analysis shows there is a 33 percent probability that ocelots in southern Texas would become extinct within 50 years under current conditions. Genetic analysis (Janecka 2006) indicates that the only two known breeding populations remaining in the United States are isolated from populations in Mexico and from each other. With respect to the Refuge's ocelot population, since 1990, ocelots on or near Laguna Atascosa NWR have lost nearly all of their genetic diversity (Janecka *et al.* 2007). Currently, the effective population size of ocelots on the Refuge is estimated to range from 8 to 13.9 breeders (Janecka *et al.* 2007). The ocelot population in Cameron County has suffered severe declines and loss of genetic diversity. Genetic heterozygosity has decreased 23 percent since 1986 (Janecka *et al.* 2007). Further adding to the genetic dilemma is recent legislation authorizing the construction of a border fence between the United States and Mexico that may be waived of all Federal environmental laws or wildlife considerations, as per the REAL ID Act of 2005 (Bies 2007).

Gulf Coast Jaguarundi (*Herpailurus yagouaroundi cacomitli*) - The jaguarundi is a small, exceedingly rare wildcat in the United States, weighing between 8 and 16 pounds with a relatively long tail and short legs. Coloration is widely variable, ranging from blackish to brownish-gray or reddish-yellow to chestnut (Hall 1981). The last known record of a jaguarundi in the United States was along State Highway 4, just east of Brownsville, Texas, when one was found road-killed in1986 in an area where the road intersects an old resaca. There have been several reported sightings on the Laguna Atascosa NWR in recent years, and historically, jaguarundis have been documented on the Laguna Atascosa Unit. However, despite recent

efforts to document the existence of these cats on the Refuge and in the vicinity, researchers have been unable to photograph or trap one. It is now estimated that less than 15 cats may exist in south Texas (Klepper 2005). Just like the ocelot, brush clearing activities in the LRGV have eliminated much of their habitat, leading to their endangered status. Efforts aimed at preserving and restoring native brush are necessary to support any remaining cats, particularly in eastern Cameron and Willacy counties.

Northern Aplomado Falcon (*Falco femoralis septentrionalis*) - The aplomado falcon is a rare, non-migratory, medium-sized Neotropical falcon of the open grasslands ranging from the southwestern United States and Mexico through Central and South America. The aplomado falcon is approximately 12–15 inches long and has a wingspan of about three feet. In south Texas, the aplomado falcon inhabits coastal prairie and savannahs with prominent scattered woody vegetation, typically a flat open area with low growing vegetation containing yuccas or mesquite trees. The species feeds primarily on small birds, but a variety of insects, crustaceans, small reptiles, and mammals are also prey items (C. Perez, personal observation 1993 and 1994). Aplomado falcons are generally year-round residents within the LRGV.

Aplomado falcon. Photo: Larry Ditto

The northern subspecies of aplomado falcon (*F. f. septentrionalis*) was listed as endangered in 1986 due to its extirpation in the United States and evidence of pesticide contamination and population declines in eastern Mexico (51 FR: 6686-6690). Hector (1987) states that the aplomado falcon may have begun its decline in the United States as early as 1905 but became exceedingly rare after 1930. The majority of aplomado falcon egg and skin collections in the United States between 1890 and 1910 were from south Texas (USFWS 1990b). Egg collection cards and other historical records (Oberholser 1974) indicate that the species was apparently concentrated in the "salt prairie" between Brownsville and Port Isabel (Bahia Grande Unit area), as this is where major collecting activities occurred in the late 1800s to the early 1900s. It is therefore plausible that the original decline of the aplomado falcon in the LRGV was most likely due to over-collection than from habitat degradation that occurred in other parts of its United States range (Chihuahuan desert grasslands of western Texas, southern New Mexico, and southeastern Arizona).

Today, the aplomado falcon has made a comeback in south Texas due to an aggressive recovery program involving captive breeding and re-introduction efforts. In 1993, releases began on the Laguna Atascosa Unit in partnership with The Peregrine Fund, a non-profit conservation group based in Boise, Idaho. In 1995, the first known United States nest of an aplomado falcon since 1952 was documented near Old Port Isabel Road and Loma Alta, a few miles southwest of the Bahia Grande Unit. As of 2004, over 900 falcons have been released in the LRGV, and 25 nesting pairs were documented in 2006. The release program in the LRGV was deemed a success, and efforts have now shifted to west Texas and New Mexico. Established territories and nesting have been annually documented in recent years on both the Bahia Grande and Laguna Atascosa units, and monitoring of aplomado falcons continues on the Refuge to document nesting and fledgling success and to monitor contaminant levels.

Prescribed fire is used to manage for healthy grassland habitat that would benefit the aplomado falcon.

Continued development within suitable habitat is another major problem, and contaminant problems for the aplomado falcon are most likely because the falcons are foraging territories adjacent to farm fields (e.g., cotton fields) treated with pesticides. Data from recent aplomado falcon nests examined in south Texas have detected levels of PCBs, DDE, and mercury concentrations in the eggshells (Mora *et al.* 1997). Mora concluded that potentially high DDE levels in certain prey species could result in negative effects on reproduction and survival of aplomado falcons. Other agricultural chemicals, such as carbamates, could cause direct mortality.

Brown pelican (*Pelecanus occidentalis*) - Although a large seacoast bird of the Atlantic and Gulf coasts, the brown pelican is the smallest of eight species of pelicans worldwide. Nonetheless, this bird weighs up to nine pounds and has a six-foot wingspan. The brown pelican feeds by plunging into the water from up to 60 feet in the air to capture small fish such as mullet. The brown pelican breeds in the Texas Coastal Bend but migrates north and south along the coast. Like many waterbirds, the brown pelican nests colonially, usually on small protected islands such as the man-made spoil islands found along the Intracoastal Waterway. In 1970, the species was listed as federally-endangered, primarily due to reproductive losses (eggshell thinning) caused by pesticides such as DDT. Between 1967 and 1974, this species was nearly extirpated from Texas but has since made a steady comeback (TPWD 2005). The brown pelican is apparently a year-round resident on the Refuge and can be seen along the Laguna Madre shoreline and on the Bahia Grande and South Padre Island units.

Piping Plover (*Charadrius melodus*) - The federally-threatened piping plover has undergone serious declines related to direct and inadvertent harassment of birds and nests by people, dogs, and ORVs; destruction of beach habitat for development projects; increased predation due to human presence in formerly pristine beach areas; and water level regulation activities that endanger nesting sites along the Missouri, Platte, and Niobrara rivers (Haig 1992). The piping plover winters along beaches and in sandflats and mudflats from Florida to northern Mexico (Haig and Oring 1988). Some of the largest known wintering populations of the piping plover and snowy plover occur along the lower Laguna Madre of south Texas (Brush 1995). During the winter months, they occur mainly on high mudflats and algal flats free of vegetation encroachment (Brush 1995). They are also noted on the beach areas along the Gulf. The piping plover is not known to breed on Laguna Atascosa NWR.

Kemp's Ridley Sea Turtle (*Lepidochelys kempii*) - The federally-endangered Kemp's ridley sea turtle is one of the smallest sea turtles, measuring about 23 to 27 inches long and weighing about 100 pounds (*Source: NPS-Padre Island National Seashore Web article 2006*). The Kemp's ridley is found mainly in the Gulf of Mexico but also occurs in the northwestern Atlantic Ocean. The species prefers the shallow Gulf coastal waters where it feeds mainly on crabs (NMFS and USFWS 1992). The Kemp's ridley has one of the most restricted ranges of any sea turtle, and its major nesting

Kemp's Ridley Sea Turtle hatchlings returning to the sea. Photo: USFWS

concentration is along the northeastern Mexican coast. Around 1947, populations were at their highest known point; in one day, an estimated 40,000 females were recorded during an "arribada" or mass nesting emergence at the beach along Rancho Nuevo, Mexico (NMFS and USFWS 1992). Since then, populations have sharply declined due originally to the ongoing exploitation of their eggs and later due to mortality of juveniles and adults as by-catch in shrimp trawler nets. By 1985, only about 700 nests were documented in the same area. Shrimping operations have now incorporated the use of turtle Kemp's ridley sea turtle hatchlings returning to the sea excluder devices or TEDs, which have significantly reduced the incidences of sea turtles getting caught in trawler nets. Escalating threats include beach development, ORVs, non-native dune vegetation, beach renourishment, and mechanized beach cleaning activities. In 1978, the governments of Mexico and the United States joined to help establish another nesting colony at Padre Island National Seashore. Currently, due to bi-national efforts and an aggressive turtle nest protection, relocation, and monitoring program, Kemp's ridley sea turtle populations are stable or increasing. The number of Kemp's ridley nesting in the United States has steadily increased from six nests in 1996 to 102 in 2006 (*Source: NPS-Padre Island National Seashore*). Thirteen of these nests occurred on the South Padre Island Unit and at other sites on South Padre Island.

Loggerhead Sea Turtle (*Caretta caretta*) -The loggerhead is a fairly large sea turtle, measuring up to 45 inches long and weighing over 350 pounds. This turtle inhabits the temperate and tropical waters of both hemispheres that include the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian Oceans (NMFS and USFWS 1991b). This is the most commonly found sea turtle in the southeastern United States, particularly noted around wrecks, underwater structures, and reefs, where they feed on crabs, jellyfish, and mollusks. In the United States, the species nests from Texas to as far as the Virginia coast, but the majority of nesting occurs in southeastern Florida. Along the Texas coast, there are 1–5 documented nests per year (*Source: NPS-Padre Island National Seashore Web article 2006*). This species was listed as threatened in 1978 due to population declines stemming from egg collection and mortality from commercial fishing. The species still faces a variety of threats such as the loss of nesting habitat from coastal development; placement of erosion control structures and other barriers to nesting; lighting; vehicular and pedestrian traffic; beach nourishment; commercial fisheries; and pollution of the marine environment (NMFS and USFWS 1991b, NMFS and USFWS 2007). Currently, the species is declining in the U.S., based on the most recent nesting surveys (NMFS and USFWS 2007). These turtles have nested on the South Padre Island Unit.

Green Sea Turtle (*Chelonia mydas*) - The green sea turtle is the largest shelled or "thecate" sea turtle, growing up to 48 inches long and weighing up to 450 pounds. The green sea turtle occurs throughout the world in tropical and subtropical waters, feeding on pastures of seagrasses and algae. In the United States, this species nests primarily along the eastern coast of Florida, but in Texas, 1–5 nests are found per year on the Padre Island National Seashore. During recent years, nesting has increased both on the east coast of Florida and in Tamaulipas, Mexico (*Source: NPS-Padre Island National Seashore Web article 2006*). On the Refuge, green sea turtles can be found within the bays and along the Gulf Coast. Young green sea turtles are commonly seen in the Port Mansfield cut, on the north end of the South Padre Island Unit, feeding on the algae on the jetty rocks. In 1978, the green sea turtle was listed as threatened except for the breeding populations in Florida and the Pacific coast of Mexico, which are listed as endangered (NMFS and USFWS 1991a). Green sea turtles have been historically exploited by people as food items; coupled with over-fishing and their exceptionally long reproductive

cycle, populations have been seriously depleted. Currently, they continue to be exploited, and degradation of nesting and foraging habitats are serious problems (NMFS and USFWS 1991a).

Hawksbill Sea Turtle (*Eretmochelys imbricata*) - The hawksbill sea turtle is one of the smaller sea turtles occurring worldwide in tropical to subtropical waters. They typically weigh 95–165 pounds and reach a shell length of about 34 inches. They can be found in shallow coastal areas, lagoons, and coral reefs where—although they are omnivorous—they mainly feed on sponges. Within the continental United States, hawksbills occur in southern Florida, such as the Florida Keys, and along the Texas coast. Within the Refuge, this species may occur in the bays and inlets to the Gulf of Mexico. Observations in Texas are usually post-hatchling or juvenile turtles believed to have originated from nesting beaches in Mexico (NMFS and USFWS 1993). However, one nest was recorded in 1998 on Padre Island National Seashore. The species was listed as endangered in 1970 due to numerous threats, but the main reason for their decline is the taking of these turtles for their shell. Their colorful ornate shell is used to make "tortoise shell" jewelry and many other items (*Source: NPS-Padre Island National Seashore Web article 2006*).

3.2.7 Refuge Priority Species

These wildlife or plant species include Federal trust species such as migratory birds, threatened species, endangered species, inter-jursdictional fish, marine mammals, and other species of concern. Priority species also include rare or declining species, or species of management concern that are on lists maintained by natural heritage programs; State wildlife agencies; other Federal agencies; or professional, academic, and scientific societies; and those mentioned in landscape-level or other conservation plans. The following priority species are known to occur or the species' potential habitat occurs on the Refuge.

Redhead *(Aythya americana)* - Redheads are medium-size diving ducks that commonly winter in the coastal bays and lagoons along the Laguna Madre. They breed in the western United States and Canada and arrive on Laguna Atascosa NWR from mid-October through the end of November. About 80 percent of the redhead population winters in the Laguna Madre, and this species accounts for over 60 percent of the duck use on the Refuge. Redheads feed in the Laguna Madre on seagrasses such as shoalgrass (*Halodule wrightii*) and use the fresh and brackish water lagoons and lakes for drinking water and for loafing.

The Laguna Madre is the chief wintering habitat for redheads because of the abundance of seagrasses, the relatively undisturbed nature of the area, and the availability of freshwater sources in the adjacent mainland. Industrial, urban, and recreational developments along this area influence waterfowl use of the Laguna Madre. Because of this, the value of Laguna Atascosa NWR will become even more important to this species as development, use, and pollution of the Laguna Madre increases. In dry years, there is a shortage of freshwater wetlands along the Laguna Madre, and lakes such as Laguna Atascosa Lake and the Laguna del Cayo become increasingly important to this species.

Historically, redheads have used the lacustrine wetlands on Laguna Atascosa NWR as a source of freshwater and as a loafing area when disturbed by people or high winds on the Laguna Madre. Redheads primarily use Laguna Atascosa Lake, Upper Cayo Atascosa, Laguna del Cayo, and Pelican Lake.

Mottled Duck ***(Anas fulvigula)*** - The mottled duck is a medium-size dabbling duck found only along the Gulf of Mexico's coastline. The mottled duck, similar in appearance but paler than the American black duck, lives a sedentary life in the fresh and brackish coastal wetlands.

They are non-migratory and usually begin breeding by January, and the young fledge around August (Audubon 2002). The mottled duck has suffered severe declines due to the loss of coastal wetlands and hybridization with introduced populations of mallard (Audubon 2002). This is particularly prevalent in Florida, as much of that State's wetlands have been drained for urban development. Along the Texas coast, the Refuge has one of the largest breeding populations of mottled ducks, but the continued loss of wetlands is still a significant threat for the mottled duck along the entire Gulf Coast.

Northern Pintail (*Anas acuta*) - The northern pintail, a popular duck for waterfowl hunters, is a large dabbling duck widely distributed across the world. Northern pintail populations have declined sharply due to avian disease and losses of freshwater potholes, conversion of agricultural fields, and conversion of grasslands. On Laguna Atascosa NWR, the northern pintail is the second most common wintering duck, after the redhead, and is found primarily on the Laguna Atascosa Unit on Pelican Lake, Laguna de los Patos, Laguna Atascosa Lake, and numerous freshwater impoundments such as Pintail Pond. They spend a majority of their time feeding in the freshwater impoundments on the Refuge before moving over to feed in the Laguna Madre and in agricultural fields near the Refuge.

Wilson's Plover (*Charadrius wilsonia*) - Wilson's plover is a small shorebird found along the sandy beaches and tidal mudflats of the Gulf Coast and southern Atlantic coast (Audubon 2002). This plover is strictly a coastal species, where it eats mostly fiddler crabs, mollusks, marine worms, and insects (Audubon 2002). This species nests on dry portions of the beach, usually near a piece of driftwood or other object, which makes them highly vulnerable to dog predation and disturbance or to trampling by people or ORVs. This species is considered by many as a "species of high concern" because of the threats facing it and its low population estimates: about 6,000 individual birds (Audubon 2002). Because these birds are only found along the coast, Wilson's plovers are threatened by increased development and the recreational uses of the beach. Their population status needs to be monitored and breeding areas protected. The Wilson's plover breeds in large numbers on South Padre Island, but unfortunately, many of these birds, eggs, and their young are crushed by the unrestricted use of ORVs by the public (Zdravkovic and Hecker 2004).

Snowy Plover (*Charadrius alexandrinus*) - The snowy plover is a small cosmopolitan shorebird of the sand flats. In North America, the species breeds in Saskatchewan, Canada, and ranges from the United States' Pacific coast and Gulf Coast to the Mexican coasts. Along the United States Pacific and Gulf coasts, the population is shrinking due to habitat degradation and expanding recreational use of beaches (Page *et al.* 1995). In response to these declines and threats to the species, the western population (*Charadrius alexandrinus nivosus*) occurring in California, Oregon, and Washington within 50 miles of the Pacific coast were listed as threatened on March 5, 1993 (USFWS 1993). Snowy plovers forage on invertebrates in the wet salt pans, on spoil sites, and along the edges of salt marshes and salt ponds. South Padre Island supports 28 percent of the nesting snowy plovers in the State of Texas (Zdravkovic and Hecker 2004). In fact, South Padre Island is the most important site for snowy plovers in the State because it has the largest amount of suitable habitat (Zdravkovic and Hecker 2004). Much of this habitat occurs on the South Padre Island Unit of the Refuge.

Reddish Egret (*Egretta rufescens*) - The reddish egret is a Texas-threatened, rare, medium-size wading bird best known for its active feeding behavior in tidal flats, salt marshes, and lagoons. The reddish egret occurs along the Gulf Coast, in the Caribbean and West Indies, and

along the northern coast in South America. In Texas, the species breeds and is a permanent resident, primarily along the central to lower coast. They feed by holding their wings apart while running and lurching after prey or by holding their wings apart and providing shade, which can attract prey. They feed on small fish, frogs, and crustaceans. Historically, the species experienced severe declines due to over-harvesting for its plumes, but it now faces threats from habitat degradation and destruction. The species is uniquely associated with salt water habitats, which have been heavily developed and affected by changes in hydrology. The protected habitats of the Refuge provide prime feeding habitat such as the extensive mudflats and estuarine wetlands on all units. Islands in the Bahia Grande and spoil islands in the Laguna Madre provide important nesting habitat.

Arctic Peregrine Falcon (*Falco peregrinus tundrius*) - The arctic peregrine falcon is a medium-size raptor that breeds in the arctic tundra and winters in South America. South Padre Island is a major staging area for arctic peregrines moving southward and northward along the Texas coast. Peregrines may be seen on the South Padre Island Unit in early October through November and again in April through May. Although this species (formerly endangered) was de-listed in 1994 (59 FR 50796), the Refuge will continue to protect important habitats for this species. According to Hunt and Ward (1988), the majority of spring migrant peregrine falcons were found in the dune areas and wind-tidal flat portions of South Padre Island.

Black-spotted Newt (*Notophthalmus meridionalis*) - The black-spotted newt is a rare, Texas-threatened species associated with ephemeral freshwater wetlands in south Texas. The species depends on relatively uncontaminated freshwater ponds and brushland habitat for breeding and cover sites. They have been found in the same ponds as Rio Grande lesser sirens, so management efforts for newts would benefit sirens. The Laguna Atascosa Unit of the Refuge contains a major population of black-spotted newts, and management efforts should continue to focus on protecting, restoring, or enhancing freshwater wetland habitats and brushlands.

Texas Botteri's Sparrow (*Aimophila botterii texana*) - The Texas Botteri's sparrow is a Texas-threatened species of subtropical grasslands whose breeding range is limited to south Texas. Preferred nesting habitat includes tall bunchgrasses with scattered bushes or fenceposts for perching. The Refuge provides important coastal grassland habitat for this species and other grassland-dependent species. Although they are secretive, like many grassland species, the Botteri's sparrow has experienced significant declines due to the conversion of grassland habitats to farm fields and urban developments.

Audubon's Oriole (*Icterus graduacauda audubonii*) - Audubon's orioles are exceedingly rare, with a low population size and extremely limited range in the United States (i.e., common in the Valley, but found in other south Texas areas). The species prefers dense brush and riparian thickets of the Tamaulipan brushlands. Dense native brushland in the Valley is extremely limited, which makes the Refuge's brushland habitat very important to this species. Efforts focused on restoring and protecting large tracts of native brushland are needed to protect and enhance this species and other priority brushland and riparian species (e.g., yellow-billed cuckoo and painted bunting).

Other Refuge Priority Species

Other priority species on the Refuge include *white-faced ibis, burrowing owl, Texas olive sparrow, Texas indigo snake, Texas horned lizard, Rio Grande lesser siren, Texas tortoise,*

keeled earless lizard, Xami hairstreak, lila de las lomas, and Lila de los llanos. These species are either rare, declining, or species of management concern on lists maintained by natural heritage programs, State wildlife agencies, other Federal agencies, or professional, academic, and scientific societies (*See Appendices A and C*).

Partners in Flight - Birds of Special Management Concern

The Refuge occurs within the South Texas Brushlands physiographic area, as identified by the Partners in Flight Program (PIF). Several bird species have been identified as Priority Bird Populations within this area (Ruth 2006). Therefore, their populations have been emphasized as a monitoring priority. The Texas Gulf Coast comprises a mosaic of biotic communities, including dense brush, brush corridors, and coastal habitats. Much of south Texas has been cleared for agriculture and urban development, and many remaining habitats are degraded. According to the PIF document, birds that have declined the most are those that inhabit riparian forests and native grasslands. PIF points out that continued protection and addition of remaining native lands into the Refuge System would offer the best opportunity to protect and restore these habitats. For the South Texas Brushlands physiographic area, PIF has identified the following birds: *Brownsville common yellowthroat, Texas Botteri's sparrow, Audubon's oriole, buff-bellied hummingbird, mountain plover, aplomado falcon, ferruginous pygmy owl, Bell's vireo, long-billed thrasher, painted bunting, Altamira oriole, red-billed pigeon, chachalaca, scaled quail, golden-fronted woodpecker, northern beardless tyrannulet, olive sparrow, Cassin's sparrow, hooded oriole, elf owl, Couch's kingbird, cave swallow, green jay, curve-billed thrasher and pyrrhuloxia.*

U.S. Fish and Wildlife Service - Migratory Bird Program Focal Species

The Migratory Bird Program Strategic Plan 2004–2014 identified 139 focal species or populations to increase the percent of migratory birds that are at healthy and sustainable levels. The target for the percent increase is equivalent to five species by fiscal year 2007, and another five species by fiscal year 2012 (five species per five-year increment). The *long-billed curlew, snowy plover*, and *painted bunting* were among those species that regularly occur on the Refuge and were identified as the highest priority focal species to be addressed first (beginning in fiscal year 2005). Other focal species identified in this plan that frequently occur on the Refuge include *Canada goose, American wigeon, mallard, mottled duck, northern pintail, brown pelican, double-crested cormorant, reddish egret, peregrine falcon, clapper rail, king rail, sandhill crane, Wilson's plover, piping plover, gull-billed tern, Caspian tern, yellow-billed cuckoo, short-eared owl, yellow-bellied sapsucker, loggerhead shrike, wood thrush, prothonotary warbler, grasshopper sparrow, seaside sparrow, eastern meadowlark, and Audubon's oriole*.

3.2.8 Focal Species

Ocelot. Photo: USFWS

Focal species are a subset of priority species and represent larger guilds of species that use habitats in a similar fashion. Focal species are selected based on the knowledge that factors limiting their populations are sensitive to landscape scale characteristics and that by addressing the needs of these focal species, other priority species within a guild are expected to benefit. In addition, an appropriate set of focal species includes consideration for the specifics of the respective ecoregion, availability of data and information, and programmatic obligations, as defined in the Strategic Habitat Conservation Report (USFWS 2006). Therefore, focal species are those

species and their associated habitats included in CCP objectives and strategies for which protection, management, research, and monitoring efforts will be focused and for which management and protection efforts to sustain them are necessary.

For this CCP, focal species are grouped into three categories, each meeting specific criteria. The first group includes listed species that meet the following criteria: 1) Federal or State-listed species that are known to (or may) reproduce or nest on the Refuge; 2) are representative of particular habitats at risk; and 3) are included in State or Federal landscape-level or conservation plans (*See Section 2.4*). The second group includes priority bird species that meet the following criteria: 1) are known to nest on the Refuge; 2) are rare or uncommon on the Refuge during any season; and 3) are included in State or Federal landscape-level or conservation plans (*See Section 2.4*). The third group includes priority waterfowl species that meet the following criteria: 1) occupies important wintering habitat or nesting habitat associated with Laguna Atascosa NWR; and 2) are representative of freshwater wetlands at risk in the lower Laguna Madre area; and 3) are included in State or Federal landscape-level or conservation plans (*See Section 2.4*).

Focal Listed Species	Focal Bird Species	Focal Waterfowl Species
Ocelot	Wilson's plover	Redhead
Jaguarundi	Snowy plover	Mottled duck
Northern aplomado falcon	Audubon's oriole	Northern pintail
Reddish egret	Texas Botteri's sparrow	
Kemp's ridley sea turtle		
Black-spotted newt		

Table 1. Laguna Atascosa NWR Focal Species

3.2.9 Exotic and Invasive Wildlife Species

Several exotic and invasive wildlife species occur on Laguna Atascosa NWR that damage native habitats or compete with native wildlife for resources. Nilgai antelope, a native of India and Pakistan, are an exotic species on the Refuge. Their populations have increased recently, and they compete with native species such as white-tailed deer for food. Feral hogs are an invasive species found on the Refuge that damage fragile wetland resources and are predators to native wildlife. Both of these species require aggressive and continuing control efforts. However, other invasive or exotic wildlife species such as Norway rats, roof rats, and Africanized honey bees may compete with native wildlife for food or affect native habitats.

3.3 Climate

The local climate on the Refuge is semi-arid and subtropical, generally warm and humid with prevailing winds from the southeast. The climate in the LRGV is largely dominated by maritime tropical air from the Gulf of Mexico (Orton *et al.* 1967). Typical of the subtropics, the LRGV is characterized by short mild winters and long hot summers (Orton *et al.* 1967). The persistent southeasterly winds from March through November give way to about 15–20 short-lived but strong northerly cold fronts each year from about December through January. These year-round winds also create a moisture deficit in the area (Farmer 1992) through high evaporation rates. Temperatures tend to be moderate; the average winter temperature is 63

degrees Fahrenheit, and the average summer temperature is 84 degrees Fahrenheit on Laguna Atascosa NWR. The normal growing season is about 336 days from January 23 to December 25. Killing frosts occur but are rare. Annual precipitation averages 27 inches, with the heaviest rainfall occurring in May through June and from mid-August through mid-October (*NOAA climatological data; Brownsville, Texas*). Extremes from 13–60 inches of annual rainfall have been recorded on Laguna Atascosa NWR (USFWS 1989). Most of the rainfall occurs as thunderstorms that are unevenly distributed both geographically and seasonally (Orton *et al.* 1967). Occasional hurricanes or tropical storms in the late summer can produce heavy rains and can cause monthly rainfall averages to peak in September (Orton *et al.* 1967). Significant prolonged droughts have also occurred.

3.4 Geology

The Lower Rio Grande Valley of Texas is a broad deltaic plain of the Rio Grande. Approximately 30,000 years ago, as sea levels receded, the Rio Grande formed a deep valley that was re-filled by deltaic and estuarine deposits 7,000–18,000 years ago following the Pleistocene glacial melts (Farmer 1992). Since that time, the Rio Grande has shifted its course several times creating the resacas that occur throughout the lower Valley. In fact, the Rio Grande has been the dominant active force in the LRGV since the Pleistocene (Farmer 1992). The Refuge lies in an ancient delta that formed the resacas. Today, the region is generally inactive due to drier climates broken only by hurricanes, which bring new deposits (Farmer 1992).

3.5 Soils

Soil types occurring on or near the Refuge include alluvial clays and silty clay loams. The majority of the Refuge's topsoils are shallow with underlying dense impervious soils resulting in slow percolation. Thus, many ponds and potholes retain water for several weeks and sometimes months after a period of heavy rains. The soils are also highly saline due to marine influence (USFWS 1989). Only a few inches in elevation can change plant distributions and types. Brushy species such as mesquite, granjeño (*Celtis pallida*), and prickly pear are found on the higher elevations while the lower elevations contain salt tolerant vegetation such as Gulf cordgrass and sea ox-eye daisy.

Most of Laguna Atascosa NWR occurs in the Sejita-Lomalta-Barrada soils association and the Laredo-Lomalta association (USDA 1977). The soils of the former association are saline, loamy, and clayey at or near sea level, and broad areas of barren clay are inundated by high tides and rains (USDA 1977). The flat topography is interspersed by "clay dunes" or "lomas" rising 10–40 feet above the surrounding soils. These lomas range in size from less than one acre to over 100 acres in size. The Laredo-Lomalta soils association is characterized by nearly level to gently sloping silty clay loam, most of which is located within old meander channels (USDA 1977). Bahia Grande is entirely comprised of the Sejita-Lomalta-Barrada soils association. South Padre Island is comprised of the Mustang-Coastal dunes association, which is nearly level to steep, poorly drained fine sands and sand dunes.

3.6 Water Management: Quality and Quantity

One of the primary purposes of the Refuge is to provide habitat for wintering waterfowl and other migratory birds. Some 415 species of birds have been recorded on Laguna Atascosa NWR, and many of these birds depend on the quality and quantity of the freshwater and saltwater wetland habitats. Focal species such as redheads, mottled ducks, snowy plovers,

reddish egrets, Wilson's plover, Rio Grande lesser siren, and black-spotted newts also depend on quality fresh and saline wetlands. The Refuge manipulates seasonal water levels to provide for the greatest variety of uses for such bird groups as dabbling ducks, wading birds, shorebirds, and larger waterbirds such as pelicans. Restoring tidal flows is one important water management focus, as well as the need to provide more freshwater sources.

The Refuge occurs within the Arroyo Colorado Watershed (ACW), which has been degraded over time through chemical pollution and other contaminants. The Refuge is a participant in the Arroyo Colorado Watershed Protection Plan, which aims to protect and restore the water quality in the watershed. The Cayo Atascosa, also part of the Arroyo Colorado watershed, is a natural freshwater drainage that flows into Laguna Atascosa Lake, where it eventually becomes more brackish, before emptying into the Harlingen Ship Channel. Two major water control structures are used to seasonally manipulate water levels in this system to provide varying water levels for migrating birds and resident wildlife. The Resaca de los Cuates and Pelican Lake are also important freshwater sources upon which waterfowl and resident wildlife depend. Keeping water in these systems is a year-round high priority. Freshwater is usually in low supply, and the Refuge is completely dependent upon rainwater, irrigation drainage, and surface runoff. Because the Refuge receives farmland and residential runoff water, water quality is an issue in some of the Refuge's major wetlands such as Laguna Atascosa Lake (Wells *et al.* 1988). Therefore, a major objective of water management on the Refuge is to provide a quality, year-round abundance of freshwater for resident and migratory wildlife. This includes working with partners within the ACW to improve the overall quality and abundance of water for wildlife and people.

3.7 Fire Management

Current Interagency Wildland Fire Policy (2009) allows for the use of both prescribed fire and wildfires to achieve resource management objectives. Fire management on Laguna Atascosa NWR is guided by the South Texas Refuge Complex (STRC) Fire Management Plan (FMP) was written to help achieve multiple resource management objectives by integrating the historical and ecological role of fire and a full range of fire management response options in consideration of fire threats to firefighter safety, the public, communities and structures, and natural resource values. These include full to limited wildfire suppression (e.g., confine, contain, or control strategies), mechanical fuel treatments, and prescribed fire. According to the STRC Fire Management Plan, approximately 99 percent of wildfires occurring on the Refuge are human-caused. Naturally occurring wildfires are not common, but have occurred historically, in the LRGV (Jahrsdoerfer and Leslie 1988). Wildfires that occur on or near the Refuge typically require response by trained Refuge fire personnel. Initial attacks on wildfires off the Refuge are usually made by local fire departments with assistance by Refuge fire personnel, most commonly when Refuge lands are potentially threatened.

Historically, fire in the LRGV was employed as a means to clear brush for farming, grazing, and settlement. Although most of the vegetative associations now present in the LRGV are not fire-dependent and would not be considered fire-adapted, some brush and native grass communities exhibit some adaptations to fire. Many desirable native grass communities likely evolved withe adaptations to some frequency of repeated fire (Scifres 1980a). However, some exotic grasses are even more fire-adapted, and wildfires can potentially enhance their spread to the detriment of native vegetation. Responsible fire management and monitoring is imperative to lessen the threat of exotic invasive grasses. Prescribed fire is used as a tool to reduce hazardous fuels, control exotic and invasive species, and to maintain or restore

important habitats such as the coastal prairie and savannah (e.g., Gulf cordgrass). Wildfire and prescribed fire effects on southern prairie grasslands and marshlands (e.g.,Gulf cordgrass) has been shown to revitalize these biotic communities by removing the dead vegetation and accumulated mulch (McAtee *et al.* 1979).

Wildland Urban Interface (WUI)

In 2000, a U.S. government report, Managing the Impacts of Wildfires on Communities and the Environment, was released that provides an overall framework for fire management in the nation's forests and rangelands (66 FR: 751-770). The report requires Federal agencies to increase investments in projects to reduce fire risk and to work with local communities to reduce fire hazards close to homes and communities. A wildland urban interface, or WUI, is defined as a community where humans and their development "...meet or intermix with wildland fuel...", such as when a colonia or subdivision is located next to Refuge property. According to the National Fire Plan Operations and Reporting System, the following are "affected communities" associated with Laguna Atascosa NWR: Arroyo City, the Laguna Atascosa Headquarters Complex, San Roman Road residences, the Cameron County Airport, the Bayview Immigration Detention Facility, and the Marine Science Center. Under the National Fire Plan of 2002, funding for WUI can help the Refuge reduce the impacts of wildfires on communities by reducing the fuel loads and by establishing fire breaks to reduce fire threats to affected communities.

Prescribed Fire

Most research suggests the southern prairies of Texas have been severely reduced and degraded due to historical overgrazing, agriculture, fire suppression, and related woodland encroachment (Bray 1901, Scifres 1980a, Johnston 1963). Bray (1901) describes vegetation changes in the southern prairies of Texas in the following way:

> *Apparently under the open prairie regime, the equilibrium was maintained by more or less regular recurrence of prairie fires. This, of course, is by no means a new idea, but the strength of it lies in the fact that the grass vegetation was tolerant of fires and the woody vegetation was not. It was only after weakening the grass floor by heavy pasturing and ceasing to ward off the encroaching species by fire that the latter invaded the grass lands.*

Prescribed fire is a management tool used to emulate natural ecological processes, to reduce hazardous fuels, and to maintain and restore fire-adapted ecosystems. Prescribed fire is used at Laguna Atascosa to reduce hazardous fuel loads and fire risk, and to maintain and restore native functioning prairie and marshland ecosystems.

On Laguna Atascosa NWR, prescribed fire is a viable habitat management strategy to reduce brush encroachment and to improve habitat for mottled ducks, aplomado falcons, and wintering waterfowl. Burning coastal prairie creates more open, diverse grassland habitat and controls encroaching brush. Burning Gulf cordgrass results in increased habitat, density, and viability and a decrease in the density of invasive species (McAtee *et al.* 1979, Oefinger and Scifres 1977, Scifres 1980b).

3.8 Refuge Law Enforcement

The Refuge Law Enforcement Program is administered from the STRC office. The STRC Law Enforcement Program is comprised of five Refuge law enforcement officers (LEOs) and one supervisory LEO that focus on three main areas in the LRGV:

1. all Refuge tracts, including Lower Rio Grande Valley NWR tracts in Cameron and eastern Willacy counties;
2. all Refuge tracts in Hidalgo and western Willacy counties; and
3. all Refuge tracts in Starr County, Texas.

In Cameron and eastern Willacy counties, where Laguna Atascosa NWR units and tracts are located, three refuge officers are currently assigned.

Refuge officers provide visitor assistance and safety, emergency medical response, and crime investigation and prevention. Visitor assistance and safety involves finding lost persons that have wandered off the trails; assisting with vehicle lock-outs, pet issues, disabled vehicles, or nuisance animals; and providing advisories on safety awareness and relevant information. Regular law enforcement presence and visitor contacts work well as preventative law enforcement tools. Perhaps one the most vital functions of the LE program is as a medical "first responder." Portions of the Refuge are very remote, with nearest medical facilities over 40 miles away in Brownsville or Harlingen. Refuge officers provide life-saving CPR, First Aid, and emergency communication and coordination for transportation of injured persons. Crime investigation on the Refuge typically involves hunting and fishing violations, plant and animal poaching, illegal dumping, and vandalism. Refuge officers also enforce vehicle traffic laws, fee compliance, and road closures, and they perform initial accident investigations. Refuge officers conduct routine patrols of Refuge tracts to maintain a visible presence on the Refuge to help detect and deter violations.

The STRC Law Enforcement Program has established partnerships with Federal, State, and local law enforcement agencies such as with the TPWD and county sheriff's offices through a Memoranda of Understanding (MOU) and interagency agreements. Partnerships with other law enforcement agencies are essential for effective law enforcement coverage, since some Refuge tracts (e.g., South Padre Island Unit), are remote and cross-jurisdictional.

3.9 Archaeological, Cultural, and Historical Resources

The LRGV area has a rich heritage of Native Americans, Spanish, and European colonists.

The earliest records of human occupation are described as big-game “Paleo-Indian” cultures, which were in the area between 9500 B.C. and 7000 B.C. From 5000 B.C. through 700 A.D. (Archaic), many of the cultural and subsistence patterns of early people remained essentially unchanged until the arrival of Spanish explorers (USFWS 1989). The Archaic hunting and gathering bands that occupied the area exhibited the seashore adaptation of the later coastal cultures (USFWS 1989). This consisted of seasonal movements between the shore and various inland locales. Beginning about 700 A.D., pottery and the use of the bow and arrow appeared (USFWS 1989). Spanish records indicate that at least 34 recognizable Native American groups were found in the Rio Grande delta region, and north and south of the river. The people spoke various dialects of a language spoken in Coahuila, hence the name “Coahuiltecan.” Coahuiltecans inhabited coastal Cameron County when the first Spanish explorers (i.e., Alonzo

Alvarez de Piñeda Expedition) arrived in 1519. The Coahuiltecans foraged on the land, seeking edible roots, prickly pear cactus fruit, and small animals. Their villages were described as clustered bell-shaped huts made of arched reeds and covered with animal skins, usually situated near freshwater sources (Scurlock *et al.* 1974). Laguna Atascosa NWR contains several Coahuiltecan archaeological sites such as the Unland Site, which was discovered in 1976 during the construction of a Refuge service road. This site contained stone and shell artifacts and human skeletal remains. Another site discovered on Horse Island contained the skeletal remains of a female buried some 1,200 years ago.

Although Spanish explorers first visited south Texas in the early 1500s, it wasn't until the mid-1700s—following the Spanish land grants—that Europeans began to settle in the area. By 1755, 23 settlements and 15 missions had been established in the region, which became known as the Nuevo Santander (USFWS 1989). Some of the earliest colonists, such as Doña Rosa Maria Hinojosa and her son Padre Nicholas Balli, inherited several land grants and established some of the earliest ranching operations. The Santa Isabella Land Grant included the area known today as Padre Island (*Source: Cameron County Historical Commission*). During the 1830s, coastal Cameron County was settled by ranchers and by pirates who were sailing contraband between the Rio Grande and Corpus Christi. In 1846, General Zachary Taylor moved his army southward and established Fort Brown (Brownsville) during the Mexican War of 1846–1848 (*Source: Handbook of Texas Online*). Major supply routes were established between Corpus Christi and Point Isabel, and travel between these points began the time of major settlement of the area. One important crossing, the Paso Real ferry along the Arroyo Colorado just west of the Refuge (near Arroyo City), was an important thoroughfare for settlers, traders, and soldiers. During and in the years following the Mexican War and the Civil War (1861–1865), cattle ranching became the major enterprise in south Texas, and the area comprising the Refuge was mostly used for cattle ranching. By the mid-1800s, practically all of the native American groups along the Texas Gulf Coast had disappeared. Although a number of factors were involved, epidemics of diseases such as smallpox and measles played a major role in the decline of native peoples of the area (Salinas 1990).

On the Bahia Grande Unit, an important historical resource is the abandoned railroad bed that crosses the Bahia Grande basin. Some of the cypress pilings are still visible today. The railroad was originally constructed in the mid-1870s to move goods and people between Point Isabel (Port Isabel) and Brownsville. The railroad was abandoned by the early 1920s. During World War II, parts of the Laguna Atascosa Unit (Management Unit 7) were used as a gunnery training range. Remnants of World War II structures still exist on the unit. Old storage bunkers, target tracks, and spent bullets can be found near Bayside Drive.

Old Railroad pilings at Bahia Grande. Photo: USFWS

Up until the early 1900s, the LRGV saw mostly cattle grazing and some small cleared patches for crops. Many of the original tracts of the Refuge comprised several ranches such as the El Granjeño Ranch, Jones Ranch, and Chapin Ranch. On the Refuge, located near Mesquite Trail, an old cemetery can be found from the early settlement days. Soon after, the LRGV was

drastically changed with the advent of mechanized agricultural practices. Attracted by the rich topsoils and the moderate climate, vast blocks of land were cleared and major irrigation systems installed, first for sugar cane and then for cotton, citrus, sorghum, and vegetables. The LRGV, on both sides of the Rio Grande, was converted to intensively managed cropland and pasture with only small pockets of natural vegetation remaining (USFWS 1969). Today, the LRGV is rapidly becoming more urbanized due to industrial expansion, retirement and resort development, and other population demands. Approximately five percent of the native brushland in the LRGV now remains (Jahrsdoerfer and Leslie 1988).

3.10 Public Access and Wildlife-Dependent Recreational Uses

The National Wildlife Refuge System Improvement Act of 1997 recognizes six wildlife-dependent public uses on refuges (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) to be given priority when determined to be compatible. Except where otherwise mandated by law, the Service must determine whether a particular use is compatible with refuge purposes before permitting it. Compatibility determinations are normally made by the refuge manager in accordance with guidelines developed by the Service (*See Appendix D*). Under these guidelines, a compatible use is defined as one that, *"...in the sound professional judgement of the refuge manager, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge."* Before making a final determination, the Refuge manager, using sound professional judgement, must consider refuge resources, Service policy, availability of staffing and funding, other applicable laws, and public opinion. Compatible uses are reviewed every 10–15 years (*See Appendix D*). The National Wildlife Refuge System Improvement Act of 1997 states that "*compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System.*"

The overarching goal of the Refuge System's wildlife-dependent recreation policy is to enhance wildlife-dependent recreational opportunities and access to quality visitor experiences on refuges while primarily managing refuges to conserve fish, wildlife, plants, and their habitats. This *"wildlife first"* approach will be used in this plan when evaluating and developing *"wildlife-dependent"* recreational opportunities, programs, and facilities on the Refuge. Wildlife-dependent recreational uses and wildlife-dependent recreation are defined as *"...hunting, fishing, wildlife observation and photography, or environmental education and interpretation."* Compatible wildlife-dependent recreational uses are the priority general public uses of the Refuge System, but other recreational uses may be allowed if they are both appropriate and compatible with the purposes of the Refuge and the Refuge System.

New and ongoing recreational uses would help visitors focus on wildlife and other natural resources. These uses would provide an opportunity to make visitors aware of resource issues, management plans, and how the Refuge contributes to the Refuge System and Service mission. Thus, only wildlife-dependent recreation will be allowed on a refuge after it is determined that it is compatible. Refuge managers work with state fish and wildlife agencies to develop and implement quality wildlife-dependent recreation programs on refuges to ensure that the refuge's hunting and fishing regulations and step-down plans are consistent with state laws, regulations (but may be more restrictive), and management plans. Any new proposed wildlife-dependent recreational uses, such as those proposed for the Bahia Grande Unit, will require the development and approval of a separate Visitor Services Plan (VSP). The wildlife-dependent recreational opportunities identified in this CCP and step-down plans (e.g., a VSP) will take into account legal commitments and, to the extent practicable, visitor interest, community traditions

and viewpoints, constraints of the location, and Refuge resources, while recognizing that wildlife conservation is the first priority (*"wildlife first"*) of the Refuge System.

To ensure continued visitor satisfaction with the Refuge's wildlife-dependent recreation programs, public input will be incorporated, using visitor satisfaction surveys or other instruments, including input during the development of this CCP or subsequent VSP that would help define and evaluate wildlife-dependent recreation programs at the Refuge. Wildlife-dependent recreation programs will be developed in consultation with State fish and wildlife agencies, and stakeholder and public input based on the following "quality criteria" to help ensure quality wildlife-dependent recreational experiences:

- Promotes safety of participants, other visitors, and facilities;
- Promotes compliance with applicable laws and regulations and responsible behavior;
- Minimizes or eliminates conflict with fish and wildlife population or habitat goals or objectives in an approved plan;
- Minimizes or eliminates conflicts with other compatible wildlife-dependent recreation;
- Minimizes conflicts with neighboring landowners;
- Promotes accessibility and availability to a broad spectrum of the American people;
- Promotes resource stewardship and conservation;
- Promotes public understanding and increases public appreciation of America's natural resources and our role in managing and conserving these resources;
- Provides reliable/reasonable opportunities to experience wildlife;
- Uses facilities that are accessible to people and blend into the natural setting; and
- Uses visitor satisfaction to help define and evaluate programs.

The following general guidelines apply to wildlife-dependent recreation throughout the Refuge System and are used in this CCP (Service Manual 605 FW1, General Guidelines for Wildlife-dependent Recreation) (*See Appendix F*):

- Supportive Recreational Uses: other activities, such as kayaking, bicycling, and camping, may be allowed only if they directly facilitate a compatible wildlife-dependent recreational use.
- Hours of Use: refuges are generally open during daylight hours and closed to the public at night. However, on occasion, night-time activities may be allowed if they are appropriate and compatible with refuge purposes and the Refuge System mission. Other factors that will be considered before allowing after-hours or night-time uses include the need for increased management, law enforcement capability, or public safety.
- Accessibility: when necessary and when compatible with resource management objectives, exceptions to general access restrictions will be made for visitors with disabilities to facilitate their experience. For example, hunters with certain disabilities will be allowed special access to hunt blinds, or accessible trails and boardwalks will be provided for mobility-impaired visitors.
- Safety: visitor safety is a key issue and a high priority when providing and developing quality, compatible wildlife-dependent recreation programs. Adequate law enforcement for basic visitor protection will be provided, and visitors will be alerted to specific safety hazards through signs, visitor education, and interpretive programs.
- Partners: partnerships with other Federal and State agencies, Friends groups, tribes, organizations, industry, local communities, schools, and others can produce significant contributions to the Refuge's wildlife-dependent recreational programs. The Refuge will

work with partners to share expertise, personnel, materials, or programs to foster a sense of ownership and stewardship of natural resources among a variety of stakeholder groups.

Transportation Management and Public Access

Access on refuges is provided primarily to facilitate the six priority public uses of the Refuge System (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) when compatible with refuge purposes and the Refuge System mission. Public access is normally only allowed in designated areas and along designated routes of travel (e.g., roads, trails, waterways, and other routes). Designated routes of travel can be either public roadways (e.g., State or county roads) and waterways or refuge roads, trails, and waterways. Refuge routes of travel and access are maintained, improved, or added through various funding sources, with one of the main sources being the Refuge Roads Program (RRP).

The RRP was established in June 1998 as part of the Transportation Equity Act for the 21st Century (TEA-21) and reauthorized in August 2005 under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). This makes Federal highway funds available to pay the cost of maintenance and improvement of refuge roads, parking areas, rest areas, pedestrian and bicycle trails, and related facilities. This also includes administrative costs associated with such maintenance and improvements. Refuge roads are generally any road open to public travel that provides access to or within a unit of the Refuge System, and for which title and maintenance responsibility are vested in the United States Government.

All projects funded under the RRP must be consistent with the goals and objectives outlined in CCPs and step-down management plans. The Service's refuge planning policy requires that transportation issues be considered in the development of a CCP, including public use roads and trails, passenger vehicles, and pedestrian and bicycle needs as appropriate for the refuge. Refuge transportation infrastructure and related issues will be coordinated with the respective State or county transportation agencies and metropolitan and rural road planning organizations to assure that, among other considerations, there are no negative impacts to traffic congestion or air quality on the Refuge.

Laguna Atascosa Unit

The Refuge provides two auto tour routes (Lakeside Wildlife Drive 1 1/2 miles, Bayside Wildlife Drive 15 miles) and six walking trails (Kiskadee 1/8 mile, Mesquite 1 1/2 miles, Paisano 1 mile, Lakeside 1/2 mile, Moranco Blanco 3 1/10 miles, and Alligator Pond 1/4 mile) on the Laguna Atascosa Unit. In addition, bicycles are allowed on designated Refuge tour and service roads. These hike-and-bike trails range from 4 to 20 miles in length. In 2001, the Federal Highway Administration (FHWA) evaluated the road and trail infrastructure on the Refuge. They re-paved 13 miles of the Bayside Wildlife Drive and improved 12 small parking areas amounting to 13,102 square feet. Main access to the Refuge headquarters and visitor center is via General Brant County Road and Buena Vista County Road. These paved county roads are the only public access routes to the Refuge headquarters and visitor center, but the poor condition of these roads currently limits public access due to concerns over vehicle damage (*See Figure 8*).

Bahia Grande Unit

Bahia Grande Unit is bounded on the north by SH 100 and on the south by SH 48. These are major, four-lane highways that connect the Town of South Padre Island to the City of

Brownsville (SH 48) and to U.S. Highway 77/83 (SH 100), near the City of San Benito. Except for a public boat ramp located off SH 48 at San Martín Lake, there are currently no developed public access points to this unit from these highways.

South Padre Island Unit

Road access to this unit is by Park Road 100 and county beach access points north of the Town of South Padre Island. The paved portion of Park Road 100 ends approximately 3 miles south of the first Refuge tract, but TXDOT has fee-title right-of-way that extends north through Refuge parcels for approximately 14 miles and terminates approximately 8.5 miles south of the Port Mansfield Channel. This unit can also be accessed by small watercraft from the Gulf of Mexico, the Port Mansfield Channel, and the lower Laguna Madre.

Under the Texas Open Beaches Act (1973), as amended, the public has legal access to and from the state-owned beaches and to privately-owned land (i.e., the beach area extending from the line of mean low tide to the line of vegetation bordering on the Gulf of Mexico), for which the public has acquired a right of use or easement (*Texas Natural Resources Code, Subtitle E. Beaches and Dunes, Chapter 61. Use and maintenance of public beaches, Subchapter B. Access to Public Beaches, Subsection 61.011*).

In the 1999 Laguna Atascosa NWR Refuge Expansion Plan, the U.S. Fish and Wildlife Service stated that it would support and cooperate with the Texas Open Beaches Act, which provides for public access on all Texas Gulf beaches. This will ensure the continued enjoyment by the public of traditional beach recreational activities such as beachcombing, swimming, fishing, overnight camping, horseback riding, and other legal public uses. These activities will continue to be allowed on the "open beaches" of the South Padre Island Unit, as defined by the Texas Open Beaches Act, and as stated in the 1999 Refuge Expansion Plan. Sensitive wildlife habitat, such as the dunes and tidal flats located inland, are not open to these activities. However, random access with motorized vehicles in washover, dune, and tidal flat areas west of the public beach area of the South Padre Island Unit is currently restricted to prevent dune erosion and to secure undisturbed habitat for wildlife that use the dunes and tidal flats. The washover, dune, and tidal flat areas are not within public access described under the Texas Open Beaches Act. In addition, the Refuge supports and cooperates with the Texas Dune Protection Act (1977), as amended, to restrict motorized recreational vehicles within the protected dune areas. Only pedestrian access is currently allowed to the dune and tidal flat areas from the beachfront for compatible wildlife-dependent recreational activities, unless seasonally closed to protect sensitive areas (e.g., nesting birds) or coastal habitats.

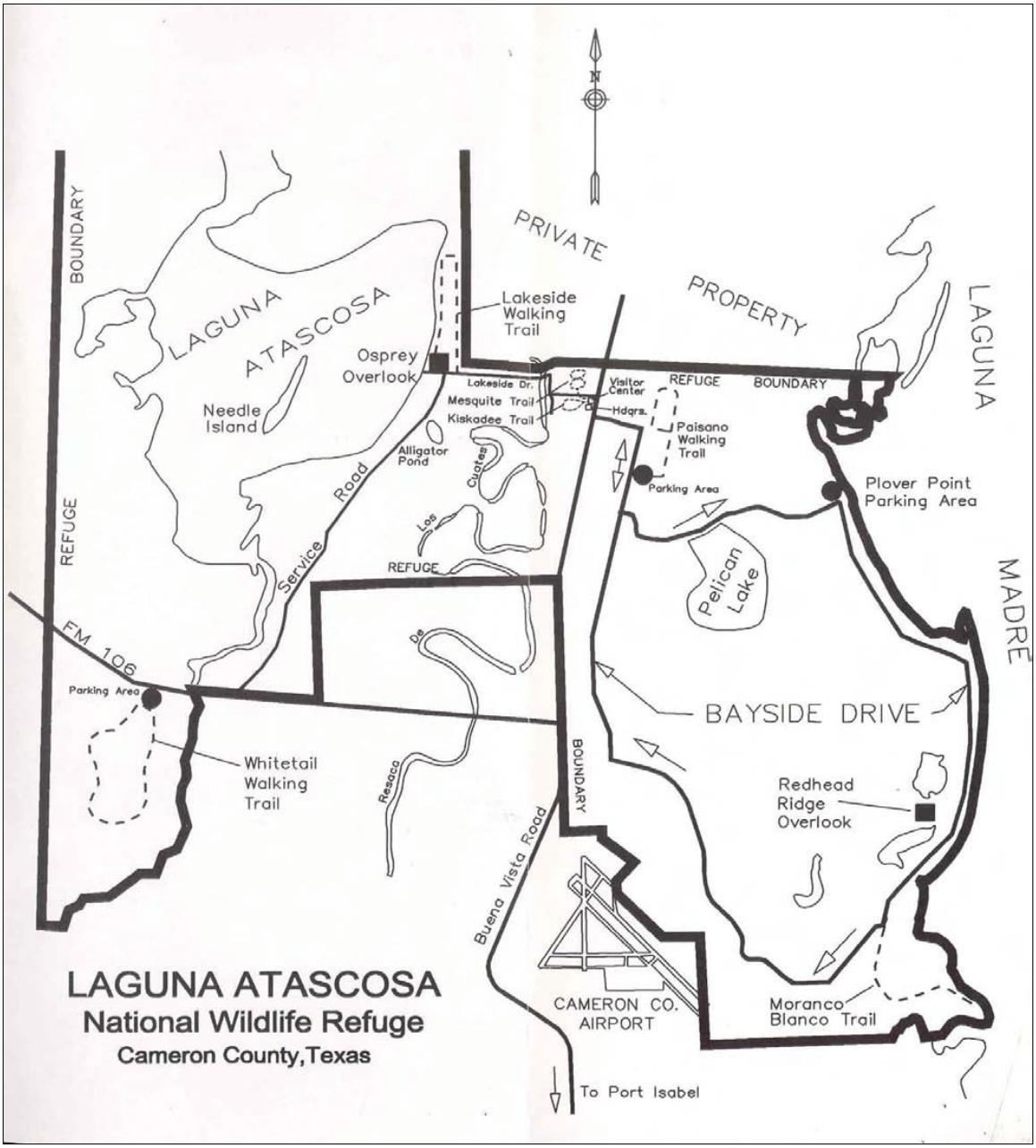


Figure 8. Laguna Atascosa Unit Roads and Trails

3.10.1 Hunting

In 1966 and again in 1997 (National Wildlife Refuge System Improvement Act), Congress recognized the legitimacy of hunting on the Refuge. The Service is dedicated to providing opportunities for hunting and other compatible wildlife-dependent recreation. Hunting is an important wildlife management tool to control populations of some species that might otherwise exceed the carrying capacity of their habitat, threaten the well-being of other wildlife species, and—in some instances— threaten human health and safety. The guiding principles that the Refuge System use to manage quality hunting on refuges are:

1) to manage wildlife populations consistent with approved management plans;
2) to promote visitor understanding of and increase visitor appreciation for America's natural resources;
3) to provide opportunities for quality recreational and educational experiences; and
4) to minimize conflicts with visitors participating in other compatible wildlife-dependent recreational activities.

Primary objectives of the hunting program on Laguna Atascosa NWR are to provide a quality recreational and educational experience for a diverse audience and to control exotic wildlife. The Refuge hunting program provides affordable and accessible public hunting opportunities that are very limited in south Texas. Therefore, white-tailed deer hunting on Laguna Atascosa NWR is one of the most popular public deer hunts in the Valley, especially for local hunters. Archery hunts have been held annually since 1970, and firearm hunts have been held annually since 1979. Special youth hunts and exotic-only hunts (e.g., feral hog and nilgai antelope) have recently been established. All regular hunts are by Refuge permit only and are conducted during specific periods within the State's hunting season. Special hunts are by Refuge permit only and may occur at any time during the year. Approximately 20,000 acres of the Laguna Atascosa Unit are currently open to hunting (*See Appendix I*). Hunting is not currently allowed on the Bahia Grande, Coastal Corridor, and South Padre Island Units. Other local hunting opportunities include public hunts on the Lower Rio Grande Valley NWR and TPWD wildlife management areas. They provide migratory bird hunting opportunities (e.g., dove hunts) that are not currently offered by the Refuge. TPWD also provides upland game hunting (e.g., quail) and javelina hunting on some of its wildlife management units in the Valley.

3.10.2 Fishing

Fishing at Bahia Grande. Photo: USFWS

Saltwater fishing is the most popular wildlife-dependent recreational activity, particularly by local residents in the LRGV. Freshwater fishing areas are limited in the Valley, and those areas open to public fishing (e.g., irrigation canals, water settling ponds) have water quality issues that may limit human consumption of fish caught in these areas. Surf-fishing, wade-fishing, bank-fishing, and fishing from boats are popular methods of fishing in the Valley. Common saltwater species pursued are red drum (redfish), sea trout, and flounder. Fishing opportunities on the Refuge are currently available at Adolph Thomae Jr. County Park (Laguna Atascosa Unit), along the Gulf beaches (South Padre Island Unit), and at San Martín Lake (Bahia Grande Unit). Boating and fishing is available along the Harlingen Ship Channel at Adolph Thomae Jr. County Park and at San Martín Lake, which are both situated within the Refuge boundary. The rest of the Refuge is not currently open to boating or fishing.

On November 12, 1986, a 25-year lease was granted to the Cameron County Parks Department for the development of a 57-acre county park on the Laguna Atascosa Unit for fishing, camping, and boating. The Adolph Thomae Jr. County Park provides quality fishing

opportunities for families that include fishing piers, picnic sites, a boat ramp, parking areas, and recreational vehicle and tent camping and cooking sites. About 70 percent of the park's annual visitation participate in saltwater fishing, as the county park provides an important public access point to the lower Laguna Madre. The nearest public boat ramps from the county park are located 25 miles to the south and 20 miles to the north. Visitation to the county park is 130,000–150,000 people per year. The majority of visitation to the park is for fishing or boating access. Fishing is also permitted along State Highway 48, at San Martín Lake on the Bahia Grande Unit. There is a public boat ramp located near this popular fishing spot. Fishing also occurs on the South Padre Island Unit, where anglers either surf-fish or drive along the beachfront to the Mansfield Channel to fish on the jetties. Freshwater fishing on the Laguna Atascosa Unit is not allowed due to contaminants found in the fishery resources (USFWS 2002, Wells *et al.* 1988) and to avoid potential wildlife disturbance.

3.10.3 Wildlife Observation and Photography

Bayside Drive boardwalk. Photo: USFWS

As one of the 10 best birding areas in the nation, with 415 documented bird species (the most species of any national wildlife refuge), the Laguna Atascosa Unit of the Refuge is a major destination for wildlife observation and photography. Nationwide, butterfly watching is growing in popularity. Consequently, Refuge visitation specifically to observe and photograph butterflies has also been increasing because of the rare, tropical butterflies that can be found in the LRGV. Seasonally, the Refuge conducts guided birding, butterfly, and other wildlife observation tours (e.g., night-time tours, school groups). Near the visitor center is a butterfly garden, wildlife viewing area, photo blind, three self-guided trails, and an amphitheater, providing easily accessible opportunities for visitors to enjoy and learn about the Refuge's wildlife and plants. There are two auto tour routes (1.5-mile Lakeside Drive and 15-mile Bayside Wildlife Drive) and six walking trails on the Laguna Atascosa Unit. This unit also has a variety of wildlife observation structures (e.g., boardwalks, viewing decks, elevated observation platform), with associated parking, to facilitate the visitor's wildlife experience. To increase wildlife observation and photography opportunities, four back-country hiking and bicycling trails, with associated trailheads, have been designated along service roads. These trails range from 4 to 20 miles in length. Bicycling, as a means to enjoy nature and observe wildlife, continues to be popular each year, particularly on the more accessible, paved Bayside Wildlife Drive. There are currently no developed wildlife observation and photography facilities on the Bahia Grande and South Padre Island units.

Ozzy the Ocelot and Friends. Photo: USFWS

3.10.4 Environmental Education and Interpretation

Refuge programs and events such as birding and nature festivals, school or youth group tours, the annual Ocelot Conservation Festival, and youth scouting programs, conducted both on- and off-site, are an essential part of ongoing environmental education (EE) efforts provided by the Refuge. A fully staffed visitor center, open year-round, serves as a

focal point for EE and interpretation programs (e.g., school group programs). Other interpretation and education features on the Laguna Atascosa Unit include interpretive signs, exhibits, and an auto tour route with associated interpretive signs. Interpretive programs currently offered include birding tours, nature walks, guided van tours, sunset wildlife tours, and butterfly identification walks. As part of the EE program, the Refuge has a designated camping area for local youth scouting groups. Environmental education programs, such as mangrove restoration and wetland sampling, have been conducted on the Bahia Grande Unit for local schools. In partnership with Sea Turtle, Inc., the public is given opportunities to witness sea turtle hatchling releases from June through August on South Padre Island. The hatchling releases include a presentation on the importance of barrier islands to endangered sea turtles. As the center for endangered ocelot recovery, the Refuge, Friends of Laguna Atascosa NWR, Marine Military Academy, and *The Valley Morning Star* newspaper annually host the Ocelot Conservation Festival to promote ocelot conservation and to provide educational opportunities on a variety of wildlife topics and Refuge programs (e.g., ocelot recovery, bird conservation, and wetland management) in a family-oriented setting. The Ocelot Conservation Festival is a special event that is gaining in popularity each year and is a major EE and outreach event of Laguna Atascosa NWR.

3.11 Socioeconomic Environment

The Lower Rio Grande Valley of Texas (LRGV) is characterized by agricultural and urban development, scattered small farming communities, and the seasonal influx of summer visitors and winter residents (i.e., Winter Texans). There are three major metropolitan areas in the Valley. The City of Brownsville, with a population of 139,722 (*Source: 2000 U.S. Census Bureau*), is located about 30 miles south of the Refuge headquarters, along the Rio Grande. Harlingen, located about 25 miles west of the Refuge, has a population of 57,564 (*Source: 2000 U.S. Census Bureau*). The third major metropolitan area is McAllen, located about 58 miles west of the Refuge, with a population of 106,414 (*2000 U.S. Census Bureau*). Overall, the population of the LRGV, which is comprised of Cameron, Hidalgo, Starr, and Willacy counties, has grown from 701,888 in 1990 to 978,369 in 2000, a 39.4 percent increase (Sethi and Arriola 2002). Cameron County grew by 28.9 percent and Willacy County grew by 13.4 percent during the same 10-year period (Sethi and Arriola 2002). In fact, the LRGV metropolitan area is one of the top 30 fastest growing regions in the nation (Sethi and Arriola 2002). Population in the LRGV is expected to continue to grow at a rate of 4 percent per year in the coming years (Sethi and Arriola 2002). Despite this growth, the LRGV ranks as one of the highest unemployment areas in the United States and also has high poverty rates (Mathis and Matisoff 2004). Over 85 percent of the population in the LRGV is Hispanic, and over 30 percent of LRGV families live below the poverty level (*Source: 2000 U.S. Census Bureau*).

Agriculture has always been the staple of the Valley's economy. The LRGV produces more than 40 crops, primarily cotton, citrus, grain sorghum, sugar cane, vegetables, and melons (*Source: Rio Grande Valley Chamber of Commerce*). The longer growing season and subtropical climate has long attracted farmers to the area, as they can produce two crops each year on the same land. Today, Valley farms and ranches produce cash receipts of $500 million per year on average (*Source: Rio Grande Valley Chamber of Commerce*). Aside from agriculture, some of the largest employers in the LRGV include public schools, hospitals, health care agencies, restaurants, food stores, and social service agencies. The service industry represents 36 percent of the total LRGV economy, followed by local government (20 percent) and trade (17 percent) (Sethi and Arriola 2002). One of the largest and fastest

growing industries is tourism, particularly nature-based or ecotourism (Mathis and Matisoff 2004). During the winter months, retired people leave their northern homes to spend the winter in the more favorable climate of the Valley. Winter Texans are an important economic factor in the LRGV since they provide a substantial source of revenue for the local economy. In the LRGV, ecotourism generates $100–$170 million annually, and creates several thousand jobs (Mathis and Matisoff 2004, after Chapa 2004). Laguna Atascosa, Santa Ana, and the Lower Rio Grande Valley NWRs are some of the main tourist attractions in the LRGV.

The Refuge's contribution to the local economy includes the local benefits of attracting approximately 350,000 visitors annually. For example, in 2002, non-residents spent almost $2.4 million related to their visits to Laguna Atascosa NWR, which resulted in $2.2 million in new economic activity, as well as 46 new jobs and $873,400 in payroll (Caudill and Henderson 2002). Additionally, there is the direct expenditure of Refuge resources, such as salaries to local employees and the purchase of equipment, services, and supplies from local vendors. For example, Refuge spending in fiscal year 2002 was $844,500, the net economic value visitors derived from their use of the Refuge was $2.7 million, and almost $6.3 million in benefits was derived from maintaining public use of this Refuge (Caudill and Henderson 2002). In the past five years, annual Refuge budget expenditures averaged $972,800, much of which makes its way into the local economy as stated previously. Refuge Revenue Sharing Act payments from the Department of the Interior are designed to offset the burden that counties feel when Refuge properties are removed from the tax rolls. Laguna Atascosa NWR's tax payments to Cameron and Willacy counties from 2003 to 2005 averaged $87,273 and $16,330 respectively (*Source: U.S. Fish and Wildlife Service Realty Division*).

3.11.1 Other Economic Uses and Reserved Mineral Rights

Other Economic Uses

Economic uses, either public or private, may be authorized on a wildlife refuge when it is determined that the use contributes to the achievement of the refuge purposes or the mission of the Refuge System, and the use is determined to be compatible. Economic uses include but are not limited to grazing livestock, harvesting hay or timber, removing sand or gravel, and cultivating crops. The only economic use currently on the Refuge is a cooperative farming program in the Coastal Corridor Unit. This program supports brush restoration on the Refuge.

Cooperative Farming Program

The Cooperative Farming Program is not only an economic use on the Refuge but also an important habitat management tool. In many cooperative farming programs on refuges, crops are typically grown as supplemental food sources for wildlife such as migratory waterfowl. On Laguna Atascosa NWR, the program focuses on brush restoration, where the cooperative farmer provides the Refuge native plant seedlings, site preparation, and personnel for planting the seedlings in return for their share of agricultural crops planted on Refuge lands.

Oil and Gas Activities

Oil and gas activities are allowed to take place on refuges for a number of reasons. On the majority of refuges, oil or gas activities occur where private entities, states, or native corporations, rather than the Federal government, own the mineral rights. Owners of these mineral rights have the right to develop, produce, and transport the oil and gas resources located within a refuge (USGAO 2001). However, the Department of the Interior's regulations

requires mineral owners to "*...to the greatest extent practicable, ...*" ensure that "*...all exploration, development and production operations...*" be conducted in such a manner as to "*...prevent damage, erosion, pollution, or contamination to the lands, waters, facilities, and vegetation of the area.*" Further, "*...so far as practicable, such operations must also be conducted without interference with the operation of the refuge or disturbance to the wildlife thereon*" (50 CFR Part 29.32). Exploring for oil and gas usually involves seismic mapping of the subsurface topography. Regardless of the technology employed, seismic surveys typically involve surface disturbance. Oil and gas drilling and production often require construction of access roads, pipelines, electrical poles, gravel pads, storage tanks, separating facilities, and compressor stations.

Under the National Wildlife Refuge System Improvement Act of 1997, the Service is responsible for regulating all activities on refuges. The Act requires the Service to determine the compatibility of activities with the purposes of the particular refuge or the mission of the Refuge System and not allow those activities deemed incompatible. However, the Service does not apply the compatibility requirements to the exercise of private mineral rights on refuges. Department of the Interior regulations also prohibit leasing Federal minerals underlying refuges outside of Alaska, except in cases where Federal minerals are being obtained by operations on property adjacent to the refuge. Nevertheless, the activities of private mineral owners on refuges are subject to a variety of legal restrictions, including Service regulations. A variety of Federal laws affect how private mineral rights owners conduct their activities. Also, Service regulations require that oil and gas activities be performed in a way that minimizes the risk of damage to the land and wildlife and the disturbance to the operation of a refuge. The regulations also require that land affected be reclaimed after operations have ceased. The Refuge reviews proposals for oil and gas activities on the Refuge and special conditions are included in a letter of agreement. Special conditions normally include seasonal restrictions to protect nesting birds, mitigation for habitat destruction, drilling fluids removal from the drilling site, and returning the site to as natural a condition as possible. Refuge personnel (an oil and gas officer assigned to the STRC) have established good working relationships with local oil and gas companies, resulting in compliance of Refuge rules and regulations.

On the Laguna Atascosa Unit, the Federal government owns all of the subsurface mineral rights. Mineral rights on the Bahia Grande, Coastal Corridor, and South Padre Island units are primarily owned by private persons or third parties. The Federal government and the State of Texas have limited mineral right ownership on the Bahia Grande Unit. Currently, the only oil and gas infrastructure on the Refuge are natural gas pipeline rights-of-way. The Refuge receives numerous requests for oil and gas exploration for privately-owned mineral interests. A major seismic survey was recently conducted on the Bahia Grande Unit as part of a larger survey of southeastern Cameron County. Established procedures at the STRC level for address all oil and gas activities (e.g., exploration, production, and transportation) on the Refuge.

3.12 Special Designations

Designated Wilderness Areas

There are no designated Wilderness Areas on Laguna Atascosa NWR, as defined by the Wilderness Act of 1964. In 1970 (35 FR 12785; August 12, 1970), North Island on the Laguna Atascosa Unit, consisting of about 9,440 acres north of the Harlingen Ship Channel, was

studied for potential wilderness status but was not designated due to waterfowl management needs (*April 2, 1971, memorandum*).

Research Natural Areas

Research natural areas (RNAs) are part of a national network of ecological areas for research, education, and biological diversity. Although RNAs are for non-manipulative research, observation, and study, they may also assist in implementing provisions of the Endangered Species Act. Two RNAs totaling 175 acres have been established on the Refuge. The Granjeño RNA represents 125 acres of mesquite-savannah located along the eastern boundary of the Laguna Atascosa Unit (Management Unit 7). The endangered ocelot breeds and occurs within this RNA. The second RNA is the 50-acre South Texas Cordgrass Prairie RNA, also located within the Laguna Atascosa Unit (Management Unit 7). This site is important for many species such as the endangered northern aplomado falcon and mottled duck.

National Natural Landmarks Program

As set forth in 36 CFR, Part 62, National Natural Landmarks are management areas having national significance as sites that exemplify one of a natural region's characteristic biotic or geologic features. Sites must be one of the best-known examples of a unique feature and must be located in the United States or on the Continental Shelf. There are 587 designated natural landmarks throughout the United States, with 43 on units of the National Wildlife Refuge System, including a site on Laguna Atascosa NWR. A 3,794-acre area surrounding the Bayside Tour Loop has been designated as the Bayside Resaca National Natural Landmark. This site exemplifies the unique resaca system (old meander channels of the Rio Grande) that occur in eastern Cameron County, Texas.

Western Hemisphere Shorebird Reserve Network Sites

In 2001, Laguna Atascosa NWR was officially designated a Western Hemisphere Shorebird Reserve Network International Site (WHSRN), along with Rancho Rincón de Anacahuitas in Mexico. The WHSRN is a voluntary, non-regulatory coalition that identifies and promotes conservation of crucial breeding, wintering, or migratory stopover sites for shorebirds. The mission of the WHSRN is: *"...to conserve shorebird species and their habitats across the Americas through a network of key sites."*

Globally Important Bird Areas

The American Bird Conservancy launched the Important Bird Areas program in 1995 to identify and document the top sites in the United States that are essential for bird conservation on a global level. For a site to be included, it must contain, at some part of the year, "critical habitat" supporting a significant population of an endangered or threatened species such as the piping plover. Another criterion is that the site must support a significantly large population of breeding, migrating, or wintering birds, including waterfowl, seabirds, wading birds, raptors, or landbirds. Laguna Atascosa NWR meets these two criteria and thus is designated by the American Bird Conservancy as a "globally important bird area."

Marine Protected Areas

In 2000, EO 13158 directed that Federal agencies work together with states, territories, tribes, and non-governmental partners to develop and maintain an effective national system of Marine Protected Areas or MPAs. An MPA is *"...any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein."* As such,

portions of Laguna Atascosa NWR qualify as an MPA. These include areas such as Bahia Grande basin, San Martín Lake, and the intertidal mudflats on the Laguna Atascosa and South Padre Island units.

Sister Protected Areas

The 2005 Resolution of the Ecosystem Conservation Working Table, under the auspices of the Canada-Mexico-United States Trilateral Commission, established Sister Protected Areas for wildlife and ecosystem conservation and management. A "Sister Protected Area" is defined as two or more nationally designated protected areas from different countries, endorsed by the Trilateral Committee, with similar resources or shared management interests, that agree to cooperate on projects and programs for the conservation and management of wildlife, plants, biological diversity, and/or ecosystems of mutual interest. Laguna Atascosa National Wildlife Refuge and the Laguna Madre and Delta del Rio Bravo Flora and Fauna Protected Area have been identified as a Sister Protected Area under this Resolution.

3.13 Environmental Contaminants

Laguna Atascosa NWR occurs in a major agricultural area that is heavily urbanized and includes an intricate web of irrigation and drainage canals, roads and highways, and commercial waterways (e.g., ship channels, intracoastal waterway). Contaminants are distributed throughout the Valley by existing irrigation and drainage systems (Jahrsdoerfer and Leslie 1988, after Black and Veatch 1981). The Arroyo Colorado, originally a distributary of the Rio Grande, flows across the Refuge and into the Laguna Madre. It receives much of the municipal, agricultural, and industrial wastes of the Valley (Jahrsdoerfer and Leslie 1988). The Arroyo Colorado, which extends 90 miles from Mission, Texas, to the Laguna Madre, passes through the Laguna Atascosa Unit as the Harlingen Ship Channel. The Cayo Atascosa is another primary freshwater drainage that flows through the Laguna Atascosa Unit. This drainage carries agricultural and residential (i.e., colonias) runoff and flows directly into Laguna Atascosa Lake. Freshwater fishing on the Cayo Atascosa and Laguna Atascosa Lake, within the Laguna Atascosa Unit, is not allowed due to contaminants found in the fishery resources (USFWS 2002, Wells *et al.* 1988). Pesticides, herbicides, and other contaminants carried into the Laguna Madre from the Arroyo Colorado and Cayo Atascosa negatively affect fish and wildlife habitats (e.g., seagrass beds) by changing nutrient levels, acidity, and oxygen levels. Agricultural pesticides are used year-round in the LRGV, and drift and overspray from aerial applications occur periodically on NWR lands (Jahrsdoerfer and Leslie 1988). The Laguna Atascosa and Coastal Corridor Units are surrounded by croplands such as cotton and sorghum that are seasonally treated with pesticides. The Refuge supports the continuation of the Agricultural Co-existence Committee, regarding the creation of buffer zones adjacent to the Refuge for pesticide spraying, both ground and aerial. Large, commercial shrimp farms are located adjacent to the Laguna Atascosa Unit, one on the south boundary and two near Arroyo City, Texas. These farms may be converted into other types of aquaculture (e.g., algae, menhaden) for the production of biofuels. Potential contaminants from these operations are currently unknown but may adversely affect water quality of Refuge wetlands and in the lower Laguna Madre.

During the early 1940s, parts of the Laguna Atascosa Unit (Management Unit 7) were used as a gunnery training range (Laguna Madre Gunnery Range). Aerial gunners for B-17 and B-29 military aircraft trained here, and the Refuge was affected by millions of .30 and .50 caliber machine gun rounds. In 1950, contractors removed 60,380 pounds of machine

gun rounds and 3,555 pounds of skeet shot from the area, but many of these bullets still remain and may pose a copper, lead, and other contaminants risk to soil, water, migratory birds, and aquatic organisms. The area is classified by the U.S. Army Corps of Engineers (Corps) as a "Formerly Used Defense Site" or FUDS (Property No: K06TX0780) and is listed as containing a hazards potential.

Other existing or potential contaminants and water quality issues identified on the Refuge include the following:

- an uncapped gas well on the Bahia Grande Unit in the Laguna Larga basin is contaminating the wetland with heavy metals and salts, which may affect fish, aquatic organisms, migratory birds, water quality, and connected wetlands;
- a desalination plant upstream of San Martín Lake on the Bahia Grande Unit may be affecting water quality and contaminating aquatic organisms and migratory birds;
- marine debris such as crude oil, medical waste, trash, and other contaminants may be affecting soils, water quality, marine organsims, and migratory birds on the South Padre Island Unit;
- airborne salty clay dust from dredge spoil sites south of the Brownsville Ship Channel may affect air quality and wildlife-dependent recreational activities on the Bahia Grande Unit;
- airborne contaminants (e.g., heavy metals, solvents, lead paint, asbestos) from industrial operations, such as ship salvage and oil platform construction, may affect air and water quality on the Bahia Grande Unit;
- several illegal dump sites containing a variety of household and residential construction debris, garbage, and chemicals are found on the Bahia Grande Unit; and
- accidental spills (e.g., oil and chemical spills, pipeline ruptures, oil and gas facilities) would cause soil and water contamination and direct fish and wildlife die-offs on all Refuge units.

4. Management Direction

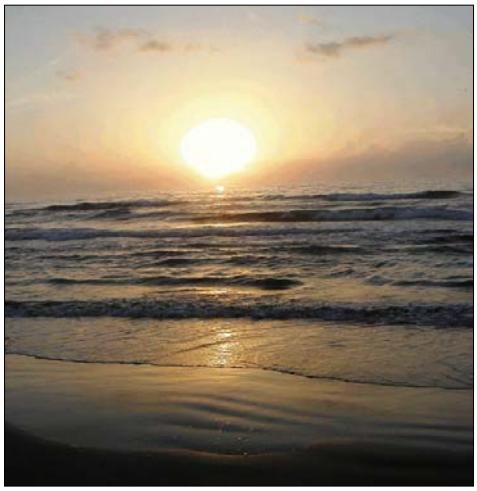


Photo: USFWS

The following goals, objectives, and strategies reflect the issues and concerns expressed by the planning team and the public. They also reflect important conservation approaches and incorporate important aspects of applicable plans and initiatives described herein. The main priorities for the Refuge include: protecting and restoring native habitats such as brushlands, grasslands, and wetlands; conserving and managing important fish and wildlife resources such as waterfowl, migratory birds, and federally-listed species; and providing quality opportunities for public use, environmental education, and interpretation. Unless otherwise noted in the text, the following items are expected to be implemented throughout the 15-year term of this plan.

Common objectives and strategies applicable to all Refuge units will be denoted with an "***All***." Specific objectives or strategies will be coded as "***L***" for the Laguna Atascosa Unit; "***B***" for the Bahia Grande Unit; "***S***"for the South Padre Island Unit; and "***C***" for the Coastal Corridor Unit, which includes all smaller managed tracts located between or near the Laguna Atascosa Unit and the Bahia Grande Unit (e.g., La Selva Verde, Waller, and Resaca de la Gringa tracts).

4.1 Goal 1

Wildlife: Protect, conserve, and manage for native wildlife such as endangered species, other Federal trust species, and priority species with an emphasis on Refuge focal species.

Wildlife Objective 1: Annually implement the six priority recovery actions (shown in the following text) to increase the Cameron County ocelot population to at least 75 ocelots and ensure their continued survival.

Discussion: On and near the Refuge, there is estimated to be approximately 10–25 ocelots, one of only two remaining breeding populations known to occur in the United States. The six priority recovery actions for the Refuge are defined as:

1) addressing the potentially deleterious effects of small population size, population isolation, and loss of genetic diversity in the Cameron County ocelot population;
2) protecting existing ocelot habitat and minimizing habitat loss on and in the vicinity of the Refuge;
3) restoring, connecting, and increasing the availability of ocelot habitat;
4) continuing the long-term monitoring and research of ocelots;
5) increasing water availability during times of drought; and
6) reducing the risk of ocelot road mortalities.

Continued close monitoring and the protection of this critically endangered species is necessary to ensure its continued survival in the United States. This includes consistency with other Service recovery activities or plans (e.g., Spotlight Species Action Plan developed by the Ecological Services Division), and the development and implementation of management plans, appropriate strategies, public education and outreach, and partnerships.

Strategy 1: Continue monitoring of the Cameron County ocelot population area to include a minimum of 750 live-trapping nights and a minimum of 2,500 camera-trapping nights per year. This includes monitoring population trends, collecting information on the condition of the animals, monitoring captured ocelots through radiotelemetry, and collecting blood samples for genetics studies and disease monitoring. **Ongoing; *Units: L, B, and C.***

Strategy 2: Develop contingency plan or protocols for any ocelots that have been injured or require veterinary care in partnership with Gladys Porter Zoo in Brownsville, Texas and others. ***2010***

Strategy 3: Continue to monitor and investigate ocelot road mortalities, and follow up on credible ocelot sighting reports within 48 hours on and near the Refuge. ***Ongoing; Units: L, B, and C.***

Strategy 4: Provide supplemental freshwater sources for ocelots during periods of drought. By 2010, determine optimal location and number of artificial water sources (e.g., guzzlers) that are needed on the Refuge to sustain population viability. Install these artificial water sources over the term of this plan. ***Units: L, B, and C.***

Strategy 5: Monitor ocelot use of habitat restoration areas, freshwater guzzlers, public road crossings and culverts, and potential wildlife corridors on private property (e.g., irrigation district canals). ***Ongoing; Units: L, B, and C.***

Strategy 6: Monitor the effectiveness of 11 ocelot crossings (culvert-type) across FM 106 (Laguna Atascosa Unit) and one crossing (elevated underpass) on State Highway 48 (Bahia Grande Unit). Monitoring will commence at the conclusion of short-term, post-construction monitoring conducted by consultants. This is to determine ocelot use and to identify any potential modifications required to ensure they function as intended, per the Service's Biological Opinion dated January 2005 (Consultation #2-11-00-F-9003), for the FM 106 road project. ***2010 and thereafter, Units: L, B, and C.***

Strategy 7: Conduct monthly roadside mortality surveys along FM 106, FM 510, State Highway 100, and State Highway 48 to document ocelot and prey species mortality. **Ongoing; *Units: L, B, and C.***

Strategy 8: Coordinate with TXDOT; utility companies; and Cameron, Hidalgo, and Willacy counties to inform the Refuge of any suspected ocelot road mortalities for timely response and documentation. **Ongoing**

Strategy 9: Partner with TXDOT and Cameron, Hidalgo, and Willacy counties to install road crossings, fencing, and warning signs at locations where ocelot road mortalities have been documented to help reduce the risk of mortality. **Ongoing**

Strategy 10: Monitor ocelots and bobcats in and around the Refuge for occurrence of diseases. **Ongoing; *Units: L, B, and C.***

Strategy 11: Coordinate with the Mexican government to translocate ocelots (or genetic material) from the State of Tamaulipas to address the small population size, population isolation, and genetic diversity issues of the Laguna Atascosa ocelot population. **Ongoing; *Units: L, B, and C.***

Strategy 12: Partner with CONANP (Comisión Nacional de Áreas Naturales Protegidas, Secretaría de Medio Ambiente y Recursos Naturales) to establish wildlife corridors to link Refuge and Tamaulipas (Mexico) ocelot populations. This includes restoring Matorral Espinoso Tamaulipeco (Tamaulipan thornscrub) in key areas. **Ongoing; *Units: L, B, and C.***

Strategy 13: Prepare an annual report of all ocelot monitoring, status, mortality, and other research results for the Refuge's ocelot population. This includes creating and maintaining a photo-identification database for the Refuge's ocelot population. **Ongoing; *Units: L, B, and C.***

Strategy 14: Develop or participate in cooperative conservation projects (such as USDA's SAFE initiative, *See Section 2.4*) and develop or participate in partnerships with willing landowners to monitor, conduct research, and help implement recovery actions on lands near or adjacent to the Refuge. **Ongoing; *Units: L, B, and C.***

Strategy 15: Develop a public outreach program to garner local community support for ocelot recovery actions and to encourage local communities and governments to consider zoning regulations that could benefit ocelot recovery. **Ongoing; *Units: L, B, and C.***

Wildlife Objective 2: Annually implement actions, as the lead recovery station, needed to support downlisting the ocelot from endangered to threatened status.

Discussion: It is currently estimated that less than 50 ocelots (in two known separate populations) are remaining in the United States; all are in southernmost Texas, and one of these populations is on and in the vicinity of Laguna Atascosa NWR in Cameron County. The other population is on and in the vicinity of private property in Willacy County with existing conservation easements. Establishing and protecting vegetated wildlife corridors have been identified as necessary to restore habitat connectivity to allow ocelots to disperse and to promote genetic exchange. In the LRGV, this means acquiring lands that connect major blocks of suitable ocelot habitat that occurs both on and off Refuge lands. To help implement ocelot recovery in the LRGV, there is a need to establish at least five corridors:

1) a "Ranchito Corridor" from the Refuge to the Ranchito Tract (Lower Rio Grande Valley NWR);
2) a "Coastal Corridor" from the Laguna Atascosa Unit to the Bahia Grande Unit (i.e., Coastal Corridor Unit);
3) a "Boca Chica Corridor" from the Bahia Grande Unit to the Boca Chica Tract (Lower Rio Grande Valley NWR);

4) a "Ranchland Corridor" from the Laguna Atascosa Unit to the Lower Rio Grande Valley NWR tracts (i.e., Willamar, El Jardin, and San Perlita), and ranch country to the north (e.g., Yturria); and

5) a "North Valley Corridor" running east-west from the Ranchland Corridor refuge tracts and ranch country along the coast to the Lower Rio Grande Valley NWR tracts in northern Willacy and Hidalgo counties (e.g., East Lake, Teniente, La Sal del Rey); See Appendix I).

This would help achieve important ocelot recovery goals and protect the Valley's unique wildlife and habitat. Some of these wildlife corridors are outside Laguna's approved acquisition boundary; however, they are within Lower Rio Grande Valley NWR's approved acquisition boundary. Therefore, there is a need to coordinate land acquisition strategies within the STRC, which includes the Lower Rio Grande Valley NWR.

Strategy 1: Coordinate land acquisition activities with the Lower Rio Grande Valley NWR to establish several wildlife corridors (Ranchito Corridor, Coastal Corridor, Boca Chica Corridor, Ranchland Corridor, and North Valley Corridor) to establish connectivity between ocelot populations. **2010 and Ongoing**

Strategy 2: Develop or participate in cooperative conservation projects (such as USDA's SAFE initiative, *See Section 2.4*) with private landowners to help establish wildlife corridors on lands near, adjacent to, and between important tracts of the Refuge that can contribute towards ocelot recovery objectives. **Ongoing; *Units: L, B, and C.***

Strategy 3: Work with Mexican researchers and academia in Tamaulipas to map density, distribution, genetic diversity, and other parameters in ocelot populations in Mexico, to help implement priority task items. **2010**

Strategy 4: Establish baseline feline disease information in ocelot and bobcat populations in Texas and Tamaulipas. **2010**

Strategy 5: Partner with CONANP (Comisión Nacional de Áreas Naturales Protegidas, Secretaría de Medio Ambiente y Recursos Naturales) to identify, map, and begin creation of one or more wildlife corridors to link Mexican and U.S. ocelot populations. This includes mapping existing protected areas, identifying wildlife corridor gaps, and restoring Matorral Espinoso Tamaulipeco (Tamaulipan thornscrub) in key areas. **Ongoing**

Strategy 6: Coordinate, provide technical support, participate in routine ocelot conservation workshops (every 3–5 years), share information, and collaborate with research partners and colleagues to support or conduct research related to radio telemetry, automatic camera stations, hair snares, genetic monitoring, disease monitoring, and other research on ocelot populations in northeastern Mexico. **Ongoing**

Strategy 7: Develop and maintain a database and repository of literature and information on ocelots. **Ongoing**

Strategy 8: Continue to monitor and investigate ocelot road mortalities and follow up on credible ocelot sighting reports within 48 hours in Texas. **Ongoing**

Strategy 9: Partner with non-governmental organizations and private landowners to provide technical assistance or support for providing supplemental freshwater sources for ocelots during periods of drought off Refuge. **Ongoing**

Strategy 10: Partner with universities, non-governmental organizations, consultants, private landowners, and others to survey and monitor ocelots and their use of habitat restoration areas, potential wildlife corridors, other areas of potential occurrence, supplemental freshwater sources, and public road crossings and culverts. **Ongoing**

Strategy 11: Coordinate with TXDOT, county road departments, and utility companies in south Texas to inform the Refuge of any suspected ocelot road mortalities for timely response and documentation. **Ongoing**

Strategy 12: Partner with State and county governments in south Texas to install road crossings, fencing, and warning signs at locations where ocelot road mortalities have been documented. **Ongoing**

Strategy 13: Coordinate with the Mexican government to translocate ocelots (or genetic material) from the State of Tamaulipas to address the genetic diversity issues of ocelot populations in the U.S. Establish a translocation working group by 2010 to include partners such as CKWRI, Dallas Zoo, Gladys Porter Zoo, CONANP, and others to develop and implement a translocation plan. **2015**

Strategy 14: Coordinate, provide technical support, and share information with research partners and colleagues working in the Arizona area to support implementation of recovery actions in that area. **Ongoing**

Strategy 15: Coordinate, provide technical support, and share information with research partners and colleagues throughout the remainder of areas of ocelot occurrence (e.g., southern Mexico, Central and South America) to support ocelot recovery efforts. **Ongoing**

Strategy 16: Provide technical assistance and information to the Service's Corpus Christi Ecological Services Field Office and other agencies on projects, actions, permits, and grant proposals that involve or may affect ocelots.

Strategy 17: Develop and present educational and outreach materials (e.g., brochures, landowner incentives) and programs (e.g., awareness training) to partners in ocelot recovery, including U.S. Border Patrol, TXDOT, USDA-Wildlife Services, landowners, hunters, utility companies, and others that may encounter ocelots or impact their habitat.

Wildlife Objective 3: Determine the status of the endangered jaguarundi in Cameron and Willacy counties within the 10–15 year term of this plan. The status involves determining presence or absence, and if present, determining if there is a breeding population, and habitat use and size of the occupied range(s).

Discussion: The status of the jaguarundi is currently unknown in the United States. The last jaguarundi documented in south Texas was in 1986, near Brownsville. Each year, there are several credible sightings on or near the Refuge, so there is a need to verify and document this

species' occurrence on or near the Refuge by implementation of appropriate trapping, surveillance, or other investigative techniques.

Strategy 1: Train staff biologists on established trapping or surveillance techniques used by our counterparts in Tamaulipas, Mexico, and study the habitat types being used by jaguarundis in Mexico. **2010**

Strategy 2: Conduct trapping and surveillance on the Refuge specifically for jaguarundi based on information gained in Mexico. Conduct intensive trapping operations in areas on the Refuge where jaguarundi sightings have been confirmed (e.g., remote trip camera). **Ongoing**

Strategy 3: Conduct radio-telemetry and monitoring of trapped jaguarundis to determine habitat use, movements, and reproduction. **Ongoing**

Strategy 4: Investigate all credible reports of jaguarundi sightings or road kills, and document findings within 48 hours of the report. **Ongoing**

Strategy 5: Develop and maintain a database and repository of literature and information on jaguarundis. **Ongoing**

Strategy 6: Provide technical assistance and information to the Corpus Christi Ecological Services Field Office and other agencies on projects, actions, recovery permits, and grant proposals that involve or may affect jaguarundis. **Ongoing**

Strategy 7: Seek partnerships to investigate potential jaguarundi occurrence on off-Refuge lands. **Ongoing**

Wildlife Objective 4: Annually conduct seasonal sea turtle nest patrols on the South Padre Island Unit to locate a minimum of 5–10 nests during the season; relocate nests to protected "corrals" to improve hatching success to a minimum of 70 percent. Nest patrols will focus primarily on the endangered Kemp's ridley, the most commonly nesting sea turtle on the Refuge. Annually monitor the nesting status of the Kemp's ridley, loggerhead, green, and hawksbill sea turtles and implement important recovery task items as they apply to South Padre Island Unit. Conduct outreach efforts and provide information to increase public awareness, participation, and support for sea turtle conservation.

Discussion: Heavy human use of South Padre Island, particularly vehicles, is an ongoing threat to the successful nesting of sea turtles. Kemp's ridley sea turtles are more vulnerable to becoming injured by vehicle traffic since they nest during the day and are more vulnerable to predation than other sea turtles. The Texas Open Beaches Act allows access to the beach area, which precludes the ability to close the area for the protection of sea turtle nests. Nest patrols and protection are necessary to ensure their recovery in the United States. Public information and outreach is also an important element in helping protect sea turtles and their nests.

Strategy 1: Continue protection of nesting sea turtles through patrols and moving eggs to a protective corral. Use sea turtle hatchling releases as public outreach events to raise awareness of sea turtle conservation efforts and the importance of the Refuge to these efforts. **Ongoing; *Unit: S.***

Strategy 2: Investigate and identify sea turtle nesting "hotspots" during sea turtle monitoring to designate these areas for special protection. Protect these areas through seasonal closures, if feasible, with posted signs; increased patrols of

these areas; and by posting public informational signs to encourage reporting of nesting sea turtles in these areas. **Ongoing; *Unit: S.***

Strategy 3: Increase the Refuge partnership with Sea Turtle, Inc., and form new partnerships with Federal, State, and local government, Mexico, and private entities to promote the conservation of sea turtles. **2010; *Unit: S.***

Strategy 4: Provide technical assistance and information to the Corpus Christi Ecological Services Field Office and other agencies on projects, actions, and recovery permits that involve or may affect sea turtles. **Ongoing**

Strategy 5: Develop and present educational and outreach materials to partners in sea turtle recovery, including Cameron and Willacy counties, resorts, private landowners, Border Patrol, and other entities that may encounter sea turtles or impact their habitat. **Ongoing**

Wildlife Objective 5: Annually, follow-up on any reported sea turtle strandings within 48-hours and implement necessary actions, as per the Stranding and Salvage Network.

Discussion: The Refuge participates in the Sea Turtle Stranding and Salvage Network, as recommended in sea turtle recovery plans. Each year, approximately 20 to 30 sea turtles are found stranded on South Padre Island and Boca Chica area. The Refuge investigates reported strandings and complies with the protocols established by the Stranding and Salvage Network.

Strategy 1: Search for and document any live or dead stranded sea turtles when nesting patrols are conducted. Collect information such as species, size, and other data, as set forth by the Stranding and Salvage Network. **Ongoing**

Strategy 2: Provide information and coordinate with the local and State Sea Turtle Stranding Coordinators. **Ongoing**

Strategy 3: Provide technical assistance and support, such as transporting cold-stunned or injured sea turtles, in partnership with Sea Turtle, Inc., and other entities. **Ongoing**

Wildlife Objective 6: Maintain a minimum of 12 breeding territories and corresponding wintering areas for aplomado falcons over the term of this CCP. Annually monitor the status of the aplomado falcon population and implement other important recovery task items as they apply to Laguna Atascosa NWR.

Discussion: Historically, the endangered northern aplomado falcon only occurred in deep south Texas, in portions of west Texas, and in southern New Mexico and Arizona. In south Texas, the northern aplomado falcon was extirpated, primarily through over-collecting during the late 1800s and early 1900s (Hector 1987). Efforts to re-establish this falcon within its historical south Texas range began with the first major releases of captive-bred falcons on Laguna Atascosa NWR in 1993 in partnership with The Peregrine Fund. As of 2004, over 900 falcons had been released in the LRGV, and in 2006, 25 nesting pairs were documented. Contaminants, prey abundance, predation, and the availability of suitable nesting sites are important concerns that may affect this species. Therefore, aplomado falcon populations in the LRGV should continue to be monitored to determine the factors limiting their reproduction and survival. Efforts to

restore and enhance coastal prairie grasslands would benefit this species, as well as other priority grassland species that occur on the Refuge such as the Texas Botteri's sparrow. Peregrine Fund field data show that aplomado falcons are at least 50 percent more successful in producing young in tree yuccas than in mesquite and hackberry. According to the 1990 recovery plan, northern aplomado falcons may be considered for downlisting to threatened status when there are a minimum of 60 breeding pairs in the United States.

Strategy 1: Conduct a pre-nesting season examination of all known nest sites (especially artificial nest structures) and make any needed repairs or replacements of old stick nests in cooperation with The Peregrine Fund. Check for potential occupancy by caracaras and white-tailed hawks. **Ongoing; *Units: L, B, and C.***

Strategy 2: Partner with The Peregrine Fund and others to monitor the status of the population on the Refuge. Annually count all breeding falcons on the Refuge. This includes monitoring nesting success from April through August and identifying any factors that may adversely affect nesting. **Ongoing; *Units: L, B, and C.***

Strategy 3: Monitor the aplomado falcon population when The Peregrine Fund ceases their monitoring program, including nesting activity and locations each year from April through August, consistent with recovery plan objectives. **Ongoing; *Units: L, B, and C.***

Strategy 4: Collect and analyze eggshell fragments for potential pesticide contamination in the falcon population, particularly nesting territories within or near farm fields, at least every 2-3 years. **Ongoing; *Units: L, B, and C.***

Strategy 5: Investigate the local use of pesticides that may cause direct mortality of aplomado falcons (e.g., carbamates). **Ongoing; *Units: L, B, and C.***

Strategy 6: Continue coordination and outreach with the local agricultural community, the Texas Department of Agriculture, and the USDA regarding pesticide applications and farming trends in areas near the Refuge that may affect aplomado falcons to ensure compliance with the 1990 National Pesticide Application Biological Opinion. **Ongoing**

Strategy 7: Implement applicable recovery plan task items (i.e., strategies), such as construction of artificial nest structures, to ensure continued success of the Refuge's aplomado falcon population based on monitoring results,. **Ongoing; *Units: L, B, and C.***

Strategy 8: Protect all known aplomado falcon nest sites and other raptors from damage by fire during controlled burns (or natural fires as much as possible), by mowing, plowing, and back-firing when necessary. This includes natural nests as well as artificial structures. **Ongoing; *Units: L, B, and C.***

Strategy 9: Plant tree yuccas *(Yucca treculeana)* where they are otherwise absent in open grassland to improve nesting opportunities. **Ongoing; *Units: L, B, and C.***

Wildlife Objective 7: Monitor the status of focal species and other Federal trust and priority species to identify the presence, population levels, and distribution of these species, as

determined by Service policy and according to national, regional, and Refuge management plans and initiatives.

Discussion: Wildlife populations are dynamic and can be affected by factors such as weather, pollution, global climate change, and human-related disturbances. There is a need to increase our knowledge of wildlife needs and to continue to assess wildlife trends and populations, particularly at the newly acquired Bahia Grande, Coastal Corridor, and South Padre Island units. Focal species monitoring (e.g., mottled ducks, redheads, northern aplomado falcons, snowy plovers, and State-listed species), as well as monitoring land changes, is necessary in order to direct appropriate management responses (i.e., adaptive management).

Strategy 1: Revise the Refuge Inventory and Monitoring Plan to include needed baseline studies, per Service Manual 701 FW2 (e.g., Update the Wildlife Inventory Monitoring step-down plan) to include all focal species *(as listed in Sections 3.2.8)*. **2010; *Units: All.***

Strategy 2: Identify and monitor snowy and Wilson's plover breeding sites for off-road vehicle (ORV) or human disturbance and establish seasonal closures on priority nesting areas. **Ongoing; *Units: B, S.***

Strategy 3: Identify and monitor colonial waterbird (e.g., reddish egret, gull-billed tern, black skimmer, and heron) nesting sites and establish seasonal closures, as needed. **Ongoing; *Units: L, B, and S.***

Strategy 4: Determine the population size and distribution of black-spotted newts and lesser Rio Grande sirens. Consider these species in conjunction with projects intended to benefit other wetland-dependent species. **Ongoing; *Units: L, B, and C.***

Strategy 5: Conduct a baseline inventory and determine winter use by burrowing owls, and monitor this species in conjunction with projects that might affect this species. **2011 (baseline inventory) and Ongoing; *Units: All.***

Strategy 6: Monitor mottled duck populations annually to determine population parameters such as distribution, numbers, nesting success, and survivorship. **Ongoing; *Units: L, B, and C.***

Strategy 7: Conduct annual winter surveys of waterfowl (e.g., mottled ducks, redheads, northern pintails), geese, and sandhill cranes. Evaluate survey frequency (e.g., weekly, bi-weekly, monthly) on each unit. **Ongoing; *Units: L, B, and C.***

Strategy 8: Conduct shorebird surveys and participate in the International Shorebird Census and the Piping Plover Census in support of the Shorebird Conservation Plan and the WHSRN. **Ongoing; *Units: All.***

Strategy 9: Evaluate established bird surveys. Modify the timing and frequency of the surveys, as needed, to better reflect the bird species chronology of use of the area. **2010; *Units: All.***

Strategy 10: Conduct surveys of non-priority species (e.g.,white-tailed deer and alligators) at least every five years to determine population status. **2010 (baseline survey) and Ongoing; *Units: All.***

Strategy 11: Conduct surveys, as needed, for exotic or invasive wildlife species such as feral hogs, nilgai antelope, and cactus moth *(Cactoblastis cactorum)*. **Ongoing; *Units: All.***

Strategy 12: Incorporate relevant strategies from the proposed Climate Change Strategic Plan and the associated five-year Action Plan by updating appropriate wildlife management step-down plans, as discussed in Section 5.2 of this CCP. **2011; *Units: All.***

Wildlife Objective 8: Achieve a minimum of an 80 percent level of protection on each Refuge unit for Federal trust species and their habitats on the Refuge within the 10–15 year term of the plan.

Discussion: Consistent with the purposes of the Refuge, management efforts will continue to focus on protecting the trust species such as waterfowl, migratory birds, and endangered and threatened species and habitats of the Refuge. As is the case with many endangered and threatened species, these important species need areas for feeding, sheltering, and reproducing without undue disturbance of these major behavioral patterns. Refuge management actions involving federally-listed species will adhere to the ESA, compatibility standards, Service policy and regulations, and NEPA to protect and enhance endangered species and other important fish and wildlife resources. The Refuge will provide technical assistance on endangered species management to private landowners or the public whenever it is requested. Protection may be accomplished through a variety of methods such as signage, fencing, environmental education, outreach, community partnerships, and law enforcement.

Strategy 1: Consult with the Corpus Christi Ecological Services Field Office on any activities or permitted uses on the Refuge that may affect federally-listed endangered or threatened species, as per the Endangered Species Act. **Ongoing; *Units: All.***

Strategy 2: Coordinate with Federal, State, and local law enforcement agencies regarding the mission of the Refuge System and the protection of federally-listed species, as well as the importance of protecting fish and wildlife resources, including the development of MOUs or interagency agreements with these agencies. Primary coordination will be conducted by the regional zone officer and the supervisor of the STRC Law Enforcement Program. **Ongoing; *Units: All.***

Strategy 3: Inspect and maintain Refuge boundary signs and markers, and replace them when stolen or damaged. Boundary signs and markers will be in both Spanish and English. **2012; *Units: All.***

Strategy 4: Identify and close sensitive wildlife areas by posting signs and markers that explain the closure (e.g., bird nesting area), including working with adjacent private landowners to develop cooperative agreements for protecting these areas that may cross onto private property. Closures may be seasonal, temporary, or permanent, depending on the area. **Ongoing; *Units: All.***

Strategy 5: Develop a leaflet to be handed out at county Beach Access Points 4, 5, and 6. This leaflet would include a Refuge map, and rules, regulations, and information that describe the importance of protecting barrier island

resources, including federally-listed species such as sea turtles and piping plovers. **2010; *Unit: S.***

Strategy 6: Identify and mark beach-to-bay access routes for ORV use to protect important wildlife such as nesting birds and piping plovers. Access routes are intended only to support wildlife-dependent recreational uses. **Ongoing; *Unit: S.***

Strategy 7: Reduce human disturbance and adverse impacts to tidal mudflats through increased law enforcement patrols, additional signage, educational outreach, and partnerships. **Ongoing; *Units: L, S.***

Strategy 8: Reduce human disturbance and adverse impacts to dunes and the inter-dunal habitat through increased law enforcement patrols, additional signage, educational outreach, and partnerships. **Ongoing; *Unit: S.***

Strategy 9: Reduce human disturbance and adverse impacts to beachfront habitat through increased law enforcement patrols, additional signage, educational outreach, and partnerships consistent with the Texas Open Beaches Act. **Ongoing; *Unit: S.***

Strategy 10: Reduce wildlife disturbance and habitat damage on the north end of the island during periods of high public use (e.g., holiday weekends) or address specific resource impacts (e.g., impacts to nesting sea turtles) through the deployment of a Special Operations Response Team (SORT). The deployment of Regional SORT teams helps supplement local Refuge law enforcement operations. **Ongoing; *Unit: S.***

Strategy 11: Acquire TXDOT's fee title rights-of-way that go through Refuge tracts. **2024; *Unit: S***.

Wildlife Objective 9: Achieve a minimum of an 80 percent level of protection on each Refuge unit for focal species and their habitats on the Refuge within the 10–15 year term of the plan.

Discussion: As development of the surrounding area continues, there is a greater need for protecting and managing focal species (*See Section 3.2.8*). Associated with this protection is the need to identify potential impacts and disturbances to focal species, as well as to educate the public on wildlife protections and considerations.

Strategy 1: Incorporate relevant Gulf Coast Ecosystem plan items, Texas Wildlife Conservation Strategy items, and task items of other applicable plans into the Refuge's habitat and wildlife management programs, as listed in *Section 2.4* of this plan. **2010; *Units: All.***

Strategy 2: Monitor bird populations and adjust management strategies, as needed, to optimize bird populations consistent with the goals of relevant plans such as those found in *Section 2.4* (e.g., NAWMP, PIF, Shorebird Conservation Plan, WHSRN). **Ongoing; *Units: All.***

Wildlife Objective 10: Annually establish at least three research projects in partnership with universities, other institutions, and other agencies (e.g., U.S. Geological Survey) that will

contribute to species protection and management of Federal trust species, priority, and focal species (*Sections 3.2.7 and 8*).

Discussion: Research would primarily focus on the conservation of Federal Trust and focal species such as the ocelot, aplomado falcon, Kemp's ridley sea turtle, waterfowl, and shorebirds. There are many research needs at Laguna Atascosa NWR that, if undertaken, would support Refuge conservation and management efforts and meet the objectives found in various plans and Federal mandates. Priority will be given to research projects that can be applied to current wildlife management or conservation issues. Research activities will be reviewed periodically by the Service and other representatives to evaluate results. This objective would also provide opportunities for students to study unique south Texas species, while at the same time help increase the pool of prospective wildlife managers and biologists that can specialize in the unique wildlife of the area.

Strategy 1: Develop research partnerships with academia such as the University of Texas-Pan American, UT-Brownsville, Texas Southmost College, and Texas A&M University Kingsville. Examples include marine or fishery surveys in response to seagrass restoration and wildlife species diversity changes in response to loma restoration in the Bahia Grande Unit. **Ongoing; *Units: All.***

Strategy 2: Develop a partnership with the U.S. Geological Survey (USGS), Biological Research Division, to assist in the development and implementation of monitoring plans, GIS-based maps, population-habitat models, and research proposals. **Ongoing; *Units: All.***

Strategy 3: Work with the regional biologist to address region-wide issues and priorities relevant to or potentially affecting Laguna's wildlife management activities such as research needs, overall conservation issues, and regional mandates or policies related to wildlife management. An example includes assessing the relative benefits of the use of wildlife guzzlers to terrestrial species during prolonged drought conditions on the Refuge. **Ongoing; *Units: All.***

Strategy 4: Partner with others, as needed, to identify and address information gaps such as species occurrence, distribution, status, and limiting factors. Examples include black-spotted and Rio Grande lesser siren status surveys in freshwater wetlands on the mainland, and herpetological and mammal baseline surveys on the South Padre Island Unit. **Ongoing; *Units: All.***

Strategy 5: Study mottled duck population ecology including nesting, brood rearing, wintering habitat needs, recruitment, mortality factors, and movement along the coast in conjunction with any habitat restoration and maintenance projects for this species, including prescribed fire. **Ongoing; *Units: L, B, and C.***

4.2 Goal 2

Habitat: Protect, restore, enhance, and maintain the ecological integrity and diversity of native habitats with an emphasis on wetlands, brushlands, coastal prairies, and barrier island habitats.

Habitat Objective 1: Conduct brush restoration efforts annually to increase the amount of ocelot habitat on and near the Laguna Atascosa Unit of the Refuge by 3,000 to 4,500 acres within the 10–15 year term of the CCP.

Discussion: The ultimate goal is to eventually provide approximately 19,000 acres of new ocelot habitat to have enough habitat on and in the vicinity of the Refuge to support up to 75 ocelots. Three habitat priorities for the Refuge's endangered ocelot program are: 1) habitat restoration and techniques to increase ocelot habitat availability and connectivity, 2) habitat protection through land acquisition, and 3) minimizing habitat losses on and in the vicinity of the Refuge. This objective addresses the first priority. The estimated normal carrying capacity on and in the vicinity of the Refuge is 30–40 ocelots. Haines *et al.* (2006) determined average ocelot home range sizes of 2,595 acres for males and 1,606 acres for females and determined this area currently has 18,533 acres of existing habitat. Biologists have recommended a minimum population size of 75 ocelots on and in the vicinity of the Refuge to ensure long-term survival of the species in the United States. Consequently, based on these calculations, approximately 19,000 acres of new ocelot habitat must be established to help meet conservation goals, assuming no existing ocelot habitat is lost.

Strategy 1: Identify and prioritize areas for brush restoration through an evaluation process, including researching of historical records and soil types and using GIS to select the appropriate sites best capable of establishing prime ocelot habitat. **2010**

Strategy 2: Identify and prioritize areas for brush restoration on newly acquired lands. **Ongoing.**

Strategy 3: Monitor brushland restoration and maintenance annually in areas that have been re-planted or enhanced and adjust management techniques, as necessary, consistent with an approved Habitat Management Plan (HMP). **Ongoing; *Units: L, B, and C.***

Strategy 4: Restore brushland habitat in the Laguna Unit to increase available habitat for ocelots and other brush-dependent species. The first priority for brushland restoration is the old farm fields along the north side of Management Unit 6 (e.g., Scum Pond area). Second priority is the old farm fields along the south and east side of Management Unit 8 (e.g., Eva Thompson Point area). The third priority is the Island Fields area of Management Unit 6. Following restoration of these areas, new areas identified in Strategy 1 will be selected and restored. **Ongoing; *Unit: L.***

Strategy 5: Restore brushland habitat on wildlife corridor tracts. Many of these tracts have the potential to support additional populations of ocelots and are important to providing connections between adjacent habitat patches and adjacent Refuge tracts. Currently, some of the tracts contain marginal habitat or farmland from prior land uses. **Ongoing; *Unit: C.***

Strategy 6: Experiment with different techniques to improve or increase brush restoration success (e.g., intensively-planted small blocks of brush habitat, herbicide applications to control invasive plants, prescribed fire) to see if usable ocelot habitat can be created in a shorter time period. **Ongoing; *Units: L, C.***

Strategy 7: Stabilize deteriorated lomas and uplands on the Bahia Grande Unit once the tidal wetlands are permanently re-flooded. Stabilizing the bare lomas with native grasses will prevent erosion—the first step in eventually restoring these areas to brushland suitable for ocelots. **Ongoing; *Unit: B.***

Strategy 8: Restore brush on the lomas at Bahia Grande after initial stabilization and soil evaluations are complete. The Bahia Grande has substantial potential for dense brush on the lomas suitable for ocelot use. This area could also serve as a connecting wildlife corridor for dispersing ocelots between Laguna Atascosa NWR, tracts of the Lower Rio Grande Valley NWR, and Mexico. **2011; *Unit: B.***

Strategy 9: Work with private landowners adjacent to or near the Refuge and others to protect and restore brush habitat suitable for ocelots *(See also: Wildlife Objective 2, Strategy 2)*. **Ongoing; *Units: L, B, and C.***

Habitat Objective 2: Continually monitor the effects of habitat management practices as determined by Service policy and according to national, regional, and Refuge management plans.

Discussion: Staff biologists will continually monitor changes to the overall quality of the Refuge's habitats and the effects of habitat management activities outlined in the appropriate step-down plans, such as the Wetlands Management Plan, to adjust and adapt habitat management strategies to achieve the desired results.

Strategy 1: Monitor vegetation response to water level management activities annually in all water impoundment systems and adjust management techniques, as necessary, consistent with an approved HMP. **Ongoing; *Units: L, B, and C.***

Strategy 2: Monitor grassland restoration and maintenance annually in areas treated with prescribed fire or other practices and adjust management techniques, as necessary, consistent with an approved HMP. **Ongoing; *Units: L, B, and C.***

Strategy 3: Conduct hydrologic monitoring of tidal flows in the Bahia Grande wetland system to determine effectiveness of the channel design and placement to ensure optimal tidal exchange and circulation within the system (*See also, Habitat Objective 3, Strategy 10)*. **Ongoing; *Unit: B.***

Strategy 4: Monitor water quality in Laguna Atascosa Lake, Laguna del Cayo, Pelican Lake, San Martín Lake, Laguna Larga, Little Laguna Madre, and Bahia Grande. This involves looking for contaminants and coordinating with the Ecological Services contaminants biologists, Cameron County, and agricultural groups. **Baseline Data: 2010; every 5 years thereafter. *Units: L, B, and C.***

Habitat Objective 3: Maintain, improve, or increase wetlands, tidal mudflats, and seagrass habitats for the benefit of Federal trust species such as migratory birds, and focal species.

Discussion: One of the primary purposes of the Refuge is for Federal trust species such as migratory birds. Millions of birds funnel along the lower Texas coast during spring and fall migrations. Many of these birds stop at the Refuge for short periods to feed and rest, while others winter here. From September through March, the Refuge hosts thousands of migrating and wintering ducks, geese, and sandhill cranes. About 80 percent of North America's redhead duck population winters on or near the Refuge because of the seagrass beds, primarily shoalgrass (Halodule wrightii) found in the lower Laguna Madre. Consistent with the Gulf Coast Joint Venture (Laguna Madre Initiative Area) plan, future management activities for redheads need to include 1) ensuring that an abundance of freshwater wetlands exist during the fall, especially during periods of prolonged drought, 2) facilitating the growth and maintenance of food sources such as seagrasses and other wetland plants, and 3) ensuring wintering areas remain relatively undisturbed. Within the Laguna Madre's bay systems, efforts are needed to protect and restore the seagrass beds and improve water quality (e.g., to reduce turbidity and other pollution) for the benefit of redhead ducks (as well as other trust species such as the green sea turtle).

About 38 species of shorebirds migrate and winter on the Refuge. To date, 415 species of birds have been recorded on Laguna Atascosa, and many of these birds depend on the quality and quantity of the saltwater and freshwater wetland habitats on the Refuge. Focal species such as mottled ducks, snowy plovers, reddish egrets, Wilson's plovers, Rio Grande lesser sirens, and black-spotted newts also depend on quality fresh, saline, or tidal mudflat wetlands. In particular, the lack of freshwater wetlands in the Laguna Madre area has been cited as a significant issue, and efforts are needed to protect and enhance these wetland types for the benefit of species such as redhead and mottled ducks. Freshwater wetlands are usually ephemeral or altered by drainage systems, and the Refuge is completely dependent on rainwater, irrigation drainage, and surface runoff to fill Refuge freshwater wetlands. Therefore, those projects that restore tidal flows, provide additional freshwater, or convey water more efficiently, are high priorities.

Strategy 1: Implement specific wetland habitat management activities, as described in the Habitat Management Plan (2008), a step-down plan to the CCP. **Ongoing; *Units: All.***

Strategy 2: Support and participate in the implementation of action items of the Arroyo Colorado Watershed Protection Plan (2007). **Ongoing; *Units: L and C.***

Strategy 3: Remove silt plugs in Laguna Atascosa Lake to enhance water flow to and from the lake. The major plugs include one area near Eva Thompson Point and another on the southern end of the lake where cattails choke the water flow. **2010; *Unit: L.***

Strategy 4: Replace dilapidated water control structure (Crossing #1) on Laguna Atascosa Lake for migratory waterbirds and waterfowl benefits. **2011; *Unit: L.***

Strategy 5: Replace water control structure (Crossing #2) on the 800-acre Lower Cayo Atascosa to control water levels in this wetland for migratory waterbirds and waterfowl benefits. **2010; *Unit: L.***

Strategy 6: Restore and maintain 180 acres of freshwater wetlands (Resaca de los Fresnos) on La Selva Verde Tract by replacing old and dilapidated water control

structures, replacing the electric water pump, and constructing channels and ponds to restore and maintain natural flow to this wetland system. **2010 and Ongoing; *Unit: C.***

Strategy 7: Restore the 180-acre Resaca de los Cuates wetland system by modifying and maintaining a 1,500-foot ditch leading into this system, and replacing water control structures in this system for water level manipulation. Continue to pursue opportunities for acquiring water through local irrigation districts to fill this wetland system. **2009 and Ongoing; *Unit: L.***

Strategy 8: Enhance Laguna de los Patos Lake by increasing the capacity and contouring its shape to provide a variety of waterfowl uses. **2011; *Unit: L.***

Strategy 9: Modify and maintain the entrance to Bayside Lake to restore tidal flows from the Laguna Madre. **2012 and Ongoing; *Unit: L.***

Strategy 10: Improve tidal flows in the 1,550-acre Horse Island mudflat area. Wind and lunar tidal flows into this area are currently blocked by an 800-foot earthen causeway on the south end and spoil areas from the Harlingen Ship Channel on the north end. Work with partners such as Ducks Unlimited and the Corps through the Continuing Authorities Program, to open tidal blockages with channels and water control structures to restore this mudflat area. **2012; *Unit: L.***

Strategy 11: Construct or enhance connections between the Brownsville Ship Channel and the Bahia Grande wetland system by working with partners to expand the pilot channel, which connects the Bahia Grande basin to the Brownsville Ship Channel, to final design specifications to increase tidal exchange within the wetland system. **2010; *Unit: B.***

Strategy 12: Complete construction of channels and associated structures (e.g., water control structures, bridges) interconnecting Laguna Larga, Little Laguna Madre, and Bahia Grande basins to improve water circulation and tidal exchange. **2010; *Unit: B.***

Strategy 13: Conduct a feasibility study to reconnect San Martín Lake to the Bahia Grande Wetland system to improve estuarine conditions by 2012. If feasible, restore the hydrological and wetland functions of San Martín Lake to include its historical connection to the Bahia Grande wetland system. **2020; *Unit: B.***

Strategy 14: Connect the El Tular Lake freshwater system to the Laguna Larga basin to enhance estuarine conditions, in partnership with Cameron County, TXDOT, and the NRCS. **2014; *Unit: B.***

Strategy 15: Restore tidal flow into Moranco Blanco Lake by establishing a channel into the Laguna Madre and modifying the existing water control structure and dike. **2015; *Unit: L.***

Strategy 16: Restore the South Boundary Drain System, bordering Management Unit 7, by maintaining the water delivery ditch, modifying the existing dike, and replacing the water control structure. **2012; *Unit: L.***

Strategy 17: Maintain and enhance natural and artificial freshwater ponds (e.g., old stock tanks) for Federal trust species (e.g., migratory birds) and other priority or focal species. **Ongoing; *Units L, B, and C.***

Strategy 18: Maintain and enhance West Lake Road freshwater impoundment system for migratory waterfowl, waterbirds, and other priority or focal species. **Ongoing; *Unit: L.***

Strategy 19: Maintain, enhance, or modify the existing drainage system of ditches on the Refuge to restore and manage freshwater wetlands. **Ongoing; *Units: L, B.***

Strategy 20: Maintain and enhance Pelican Lake and associated drainage ditches for wintering waterfowl, waterbirds, and other priority or focal species. **2012; *Unit: L.***

Strategy 21: Restore the West Cayo Mudflat system by maintaining, enhancing, or constructing dikes, channels, and water control structures that would allow flow from the Harlingen Ship Channel and the Arroyo City shrimp farms. **2012; *Unit: L.***

Strategy 22: Assess potential lead and copper contamination of Pelican Lake and nearby areas in the Laguna Atascosa Unit, Management Unit 7, from leftover spent bullets in the Formerly Used Defense Site (FUDS). **2012; *Unit: L.***

Strategy 23: Protect the inter-dunal freshwater wetlands and mudflat habitats from ORV use and other activities (e.g., oil and gas exploration). **Ongoing; *Unit: S.***

Strategy 24: Restore seagrass beds in the Bahia Grande tidal wetland system upon completion of the main channel that connects it to Brownsville Ship Channel. **2012; *Unit: B.***

Strategy 25: Implement management and protection measures to protect and enhance seagrass habitats per the Seagrass Conservation Plan for Texas as they apply to Laguna Atascosa NWR. **Ongoing; *Units: L, B, and S.***

Habitat Objective 4: Maintain, improve, or restore native upland habitats to meet the needs of Federal trust species (e.g., endangered species) and priority or focal species.

Discussion: The Refuge contains several unique habitat types, such as Tamaulipan thornscrub, which support endangered species and numerous other priority wildlife. The Refuge's diverse assemblage of brushy and grassy uplands are home to the endangered ocelot, jaguarundi, and aplomado falcon. The ocelot is an area-sensitive species requiring large, dense brush tracts. In addition, priority species such as the Texas tortoise and focal species such as the Texas horned lizard and Botteri's sparrow depend on native upland habitats. As the area surrounding the Refuge continues to be rapidly developed, there is a continuing need to maintain and enhance uplands such as native brushland for the recovery of endangered species; to maintain and enhance migratory bird habitats and; to provide public opportunities for the enjoyment of coastal south Texas wildlife for generations to come. Strategies for this objective also take into consideration the important recommendations of landscape level plans such as the PIF-North American Landbird Conservation Plan (*See Section 2.4*).

Strategy 1: Develop a vegetative type cover map using GIS by **2009**. ***Units: All.***

Strategy 2: Identify locations with appropriate soil types to determine the best approach for brushland restoration. **Ongoing; *Units: L, B, and C.***

Strategy 3: Manage Gulf cordgrass habitat with a fire management program that utilizes both prescribed fire and wildlife to enhance mottled duck nesting habitat and to create green forage for migratory waterfowl and sandhill cranes. **Ongoing; *Units: L, B.***

Strategy 4: Provide supplemental freshwater sources for ocelots and other wildlife during periods of drought. Increased ocelot mortality and lack of reproduction have been attributed to the lack of available water during droughts. One way to provide supplemental water is to install artificial "wildlife guzzlers." They are designed to collect and store dew and rainwater and then direct it into concrete water holes accessible to wildlife. Also, determine location and number of guzzlers that may be needed on other Refuge units by **2010**. **Ongoing; *Units: L, B, and C.***

Strategy 5: Use prescribed fire, or other treatments, to reduce brush encroachment into grassland areas and to help manage grassland habitat to increase population densities of rodents and other prey to benefit species such as the aplomado falcon, white-tailed kite, and other avian predators *(See also: Habitat Objective 5, Strategy 8)*. **Ongoing; *Units: L, B.***

Strategy 6: Enhance "edge" habitat adjacent to prime brush habitat to optimize the prey base for the ocelot by prescribed fire or other treatments. **Ongoing; *Units: L, B.***

Habitat Objective 5: By 2024, reduce by more than 50 percent of all invasive species on the Refuge.

Discussion: The spread or introduction of invasive species is an ongoing and serious threat to native habitats. Executive Order 13112 requires, among other things, that Federal agencies use relevant programs, authorities, and funds to monitor for, prevent, and control the spread of invasive species. The spread of invasive grasses threatens the biodiversity of rare plant communities on the Refuge's lomas (e.g., lila de las lomas and Lila de los llanos populations).

Strategy 1: Develop and implement an integrated pest management plan to address Refuge habitat needs as well as comply with Federal mandates. The Integrated Pest Management Plan includes strategies for surveying, mapping, monitoring, and controlling invasive species as per existing budgets and staff**. 2011; *Units: All.***

Strategy 2: Improve the control of exotic nilgai antelope and feral hogs by developing and implementing specific control plans for these species. **2010; *Units: L, B, and C.***

Strategy 3: Control Brazilian peppertree stands on the Refuge through mechanical and chemical treatments. **Ongoing; *Units: L, C.***

Strategy 4: Remove saltcedar and replant wildlife corridor with native brush used by ocelots on the Sendero del Gato Tract (formerly known as the Schatz Tract). This project should be done in segments to ensure protected wildlife corridor habitat is available at all times of the year. **Ongoing; *Unit: C.***

Strategy 5: Control saltcedar stands through mechanical and chemical treatments on the Refuge. **Ongoing; *Units: L, C.***

Strategy 6: Control guinea grass, buffelgrass, and other exotic grasses on the Refuge with particular focus on the lila de las lomas and Lila de los llanos plant communities on the lomas. **Ongoing; *Units: L, B, and C.***

Strategy 7: Monitor for and map other invasive and/or exotic species as indicated by an integrated pest management plan. **Ongoing; *Units: All.***

Strategy 8: Use prescribed and wildland fire to maintain and restore coastal prairie communities at four- to seven-year fire frequencies to enhance native species abundance and landscape diversity, and to reduce non-native invasive species. **Ongoing; *Units: L, B, and C.***

Habitat Objective 6: Encourage research with universities and other research partners that will contribute to the biological database of the Refuge or contribute to habitat restoration or management of Federal trust species and priority species. The research activities will be reviewed periodically by the Service and other representatives to evaluate research results. Research will focus on Federal trust species and priority species (e.g., ocelots, sea turtles, migratory birds, and State-listed species) monitoring and habitat management activities.

Discussion: There are many informational gaps regarding wildlife and habitat on the Refuge. This significantly limits management efforts in supporting the purposes of the Refuge and in meeting the goals and objectives of various conservation plans and Federal mandates. Appropriate research is needed to fill these informational gaps. This objective would also provide opportunities for students to study unique south Texas coastal environments while helping increase the pool of prospective wildlife managers and biologists that can specialize in the ecology of the area.

Strategy 1: Develop research partnerships with academia such as UT-Pan American, UT-Brownsville, and Texas A&M University-Kingsville to accomplish high priority research needs. **Ongoing; *Units: All.***

Strategy 2: Work with the regional office Refuge biologist to prioritize research needs based upon biological resources, wildlife trends, and corresponding management activities. **Ongoing; *Units: All.***

Strategy 3: Identify information gaps regarding distribution and abundance of flora and fauna, particularly on Bahia Grande and South Padre Island Units. **Ongoing; *Units: All.***

Strategy 4: Develop a field research station at Bahia Grande through partnerships (e.g., local universities). **2011; *Unit: B.***

Habitat Objective 7: Protect and conserve wildlife habitat, particularly tracts that provide connecting links between adjacent Refuge tracts and tracts containing unique or declining habitat, through working closely with the Lower Rio Grande Valley NWR and through partnerships, land protection, and land acquisition.

Discussion: By working with partners, the Service can more fully ensure that healthy wildlife populations and habitat are here for future generations. A concerted effort with those entities interested in the long-term health of coastal south Texas biotic communities is essential. Additionally, land acquisition is the main tool to ensure protection of wildlife habitats in

perpetuity. Laguna's current acquisition boundary is limited to eastern Cameron County and may not include additional lands that could serve as important wildlife corridors or connecting links between adjacent Refuge tracts or other key conservation lands. Top acquisition priorities are connecting the Bahia Grande and Laguna units (e.g., via the Coastal Corridor Unit); acquiring inholdings within the larger Refuge parcels, especially on the South Padre Island Unit in the Coastal Barrier Resources Act (CBRA) area; and establishing wildlife corridors between Refuge tracts and other protected areas north of the Laguna Unit.

Strategy 1: Pursue brushland and wildlife corridor land acquisition. Seek to acquire from willing sellers, and contingent upon Congressional funding, lands that contain high quality or restorable habitats. **Ongoing; *Units: All.***

Strategy 2: Transfer all Lower Rio Grande Valley NWR tracts within Laguna Atascosa NWR's approved acquisition boundary to Laguna Atascosa NWR (i.e., an administrative land transfer between refuges). **2011; *Units: B, C***.

Strategy 3: Work closely with the Lower Rio Grande Valley NWR to establish wildlife corridors to connect Refuge tracts with those of the Lower Rio Grande Valley NWR. Identified potential wildlife corridors include: Ranchito Corridor, Ranchland Corridor, Boca Chica Corridor, and North Valley Corridor *(See also: Wildlife Objective 2, Strategy 1)*. **2010 and Ongoing; *Units: L, B, and C.***

Strategy 4: Work closely with Cameron County Drainage Districts 3 and 4 to minimize brushland habitat loss and disposal impacts during ditch maintenance activities on La Selva Verde tract and the Laguna Unit. This includes continuing existing management agreements with these Districts. **Ongoing; *Units: L, C.***

Strategy 5: Develop management agreements with irrigation and drainage districts to minimize brushland habitat loss during ditch and canal maintenance activities. These agreements will help create or improve wildlife corridors connecting Refuge tracts. **Ongoing; *Units: L, B, and C.***

Strategy 6: Coordinate with the Corpus Christi Ecological Services Field Office and non-governmental organizations (NGOs) such as Environmental Defense, to promote or encourage private landowners to participate in Safe Harbor agreements and other landowner incentive programs. Emphasis will be placed on establishing or protecting wildlife corridors between Refuge tracts and other protected areas for the benefit of ocelots and other listed species, as necessary. **Ongoing; *Units: All.***

Green Jays. Illustration: Ram Papish

Strategy 7: Continue to develop partnerships for habitat conservation and protection with other Federal agencies, private landowners, communities, and NGOs, such as Environmental Defense, The Nature Conservancy, and The Conservation Fund. Examples include USDA's SAFE

Initiative *(See also: Wildlife Objective 2, Strategy 2 and Section 2.4)*. **Ongoing; *Units: All.***

Strategy 8: Incorporate relevant strategies from the proposed Climate Change Strategic Plan and the associated five-year Action Plan by updating the Refuge's Habitat Management Plan (HMP). **2011; *Units: All.***

Strategy 9: Coordinate with agencies such as the USGS, NOAA, and others regarding global climate change or sea level rise and its potential effects at Laguna Atascosa NWR for consideration in Refuge management activities. **Annually.**

4.3 Goal 3

People: Connect people with nature by providing compatible wildlife-dependent recreation, interpretation, and environmental education to a diverse audience by offering quality visitor services and facilities. Provide outreach programs with an emphasis on reaching local residents.

The National Wildlife Refuge System Improvement Act of 1997, as amended, emphasizes that wildlife-dependent recreation uses are appropriate, priority uses and should be facilitated when compatible with Refuge purposes and the mission of the Refuge System. Priority wildlife-dependent uses include hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Other recreational uses may be allowed if appropriate and compatible with the purposes of the Refuge and the Refuge System mission. The guidelines used for developing the following objectives and strategies are described in this CCP in Section 3.10: *Public Access and Wildlife-Dependent Recreational Uses*.

Hunting and Fishing Opportunities

People Objective 1: Annually evaluate the hunting program on the Laguna Atascosa Unit to enhance hunting access and opportunities for a safe, quality hunting experience for diverse audiences, and develop hunting opportunities, as compatible, for other Refuge units.

Discussion: Hunting is an important wildlife management tool that the Refuge System recognizes as a healthy, traditional outdoor pastime, deeply rooted in the American heritage. Hunting is an appropriate use of the Refuge System; however, the Refuge manager must still determine if and where hunting is compatible on the Refuge. It is also considered a priority general public use of the Refuge System and will receive enhanced consideration over non-priority uses. Hunting programs can promote understanding and appreciation of natural resources and their management on lands and waters in the Refuge System. The Refuge's hunting program relies on close cooperation and coordination with TPWD in developing and managing hunting opportunities and in setting Refuge population management goals and objectives. Refuge hunting regulations are consistent with State fish and wildlife laws, regulations (but may be more restrictive), and management plans.

The Laguna Atascosa Unit offers the largest public hunt in the LRGV, an area known for limited public hunting opportunities. Recreational hunts are provided at the Refuge for white-tailed deer during the State season. In addition, feral hogs and nilgai antelope, with no bag limits, are hunted during the white-tailed deer hunts. The current hunt program on the Laguna Atascosa Unit is directed by the 1994 Hunt Plan with 2004 revisions, which provides thorough documentation for population ceilings, bag limits, and objectives for the program.

Currently, no public hunting has been developed for the South Padre Island Unit and the Bahia Grande Unit. As stated in the Refuge's 1999 Refuge Expansion Plan, the Refuge decided not to allow public hunting on the South Padre Island Unit. This decision was made, in part, due to the lack of huntable populations of big game, upland game, and migratory birds sufficient to have quality hunts. Additionally, the non-contiguous Refuge tracts on the South Padre Island Unit, interspersed with private property and public beachfront (i.e., Texas Open Beaches Act), do not facilitate safe public hunts. However, the Bahia Grande Unit could offer several public hunting opportunities because it is a large, singular unit and has huntable game populations. This unit may offer waterfowl, big game, upland game, and exotic wildlife (e.g., feral hogs and nilgai antelope) hunting opportunities.

Strategy 1: Revise the hunting plan as part of the VSP. **2011; *Units: All.***

Strategy 2: Determine the feasibility of developing a migratory bird hunting program (e.g., waterfowl and doves) on the Bahia Grande Unit by **2011**. ***Unit: B.***

Strategy 3: Determine the feasibility of developing an upland game bird hunting program (e.g., quail) on the Bahia Grande Unit by **2011**. ***Unit: B.***

Strategy 4: Determine the feasibility of developing a big game hunting program (e.g., nilgai antelope and feral hogs) on the Bahia Grande Unit by 2011. ***Unit: B.***

Strategy 5: Determine the feasibility of developing a migratory bird hunting program (i.e., doves only) and an upland game bird hunting program (e.g., quail) on the Laguna Atascosa Unit by **2011**. ***Unit: L.***

Strategy 6: Determine the feasibility of opening Management Unit 4 (area north of the Harlingen Ship Channel) to big game hunting and to waterfowl hunting on the Laguna Atascosa Unit by **2011**. ***Unit: L.***

Strategy 7: Determine the feasibility of having quality, special public hunts directed toward youths (e.g., family hunts), individuals with disabilities, underrepresented groups by **2011**. ***Units: L, B.***

Strategy 8: Update the Refuge Web site to provide bilingual public hunting information, such as application forms and Refuge hunting regulations, by **2010**. ***Units: All.***

Strategy 9: Increase Refuge LE presence on the South Padre Island Unit during the general Texas hunting season to prevent poaching and illegal hunting in partnership with the LE Division of TPWD. **2011; *Unit: S.***

People Objective 2: Annually evaluate the fishing program on the Refuge to enhance fishing access and opportunities for a safe, quality fishing experience for diverse audiences and to expand fishing opportunities over current levels when compatible by 2015.

Discussion: Fishing is one of the top recreational activities enjoyed by local residents and is therefore an important wildlife-dependent activity on the Refuge. Fishing is an appropriate use of the Refuge System; however, the Refuge manager must still determine if and where fishing is compatible on the Refuge. It is also considered a priority general public use of the Refuge System and will receive enhanced consideration over non-priority uses. Fishing programs can promote understanding and appreciation of natural resources and their management on lands and waters in the Refuge System. The Refuge fishing program relies on

close cooperation and coordination with TPWD in developing and managing fishing opportunities. Fishing access and opportunities on the Refuge will be high quality, conducted in a safe and cost-effective manner, and carried out in accordance with State regulations *(See Section 3.10.2 for a description of current fishing opportunities*).

Strategy 1: Develop a fishing plan as a chapter of the VSP by 2011. ***Units: All.***

Strategy 2: Evaluate the Adolph Thomae Jr. County Park Cooperative Management Agreement, which is set to expire in 2011, if requested by Cameron County for the continuation of public fishing and boating access at the park by **2011**. An appropriate use finding and compatibility determination will be conducted at that time. ***Unit: L.***

Strategy 3: Determine the feasibility of allowing seasonal wade-fishing access (e.g., Memorial Day to Labor Day) to the Laguna Madre from the Bayside Wildlife Drive in Management Unit 7, including any additional infrastructure (e.g., parking areas and access points) by **2011**. ***Unit: L.***

Strategy 4: Determine the feasibility of allowing wade-fishing and non-motorized watercraft (e.g., canoe and kayak) on the Bahia Grande off SH 48, including the addition of parking areas and a fishing and boat access pier by **2012**. ***Unit: B.***

Strategy 5: Enhance fishing access opportunities at San Martín Lake along SH 48 in partnership with TXDOT and TPWD to provide better parking and other infrastructure by **2012**. ***Unit: B.***

Strategy 6: Conduct periodic water testing and fish sampling at San Martín Lake, Bahia Grande, and Laguna Larga to monitor water quality and identify any potential contaminants in fish and other marine life in partnership with the Texas Commission on Environmental Quality. **Ongoing; *Unit: B.***

Strategy 7: Conduct a minimum of two youth and family-oriented fishing events annually (e.g., Junior Angler program) in partnership with TPWD and Valley recreational fishing organizations. **Ongoing; *Units: L, B.***

Strategy 8: Identify and post designated access routes for motorized vehicles at traditional access locations (e.g., washovers) from the public beach side on South Padre Island to designated sites along the shore of the Laguna Madre to allow boating and fishing access. **2011; *Unit: S.***

Strategy 9: Increase LE presence on the Refuge to prevent poaching and illegal fishing in partnership with the LE Division of TPWD. **Ongoing; *Units: All.***

Strategy 10: Update the Refuge Web site to include bilingual public fishing information by **2010**. ***Units: All.***

Wildlife Observation and Photography

Laguna Atascosa NWR is recognized as one of the best refuges for the popular activity of bird watching, and it is one of the best butterfly watching locations in the nation. To date, 415 species of birds have been recorded on the Refuge, more than any other national wildlife refuge. The Refuge is a popular destination for wildlife viewing and photography, attracting more than 85,000 visitors annually to engage in these and other activities.

People Objective 3: Improve the quality of wildlife observation and photography opportunities for diverse audiences, and increase participation by 10 percent over current levels by 2018 on the Laguna Atascosa Unit by updating existing programs, facilities, or infrastructure; on the Bahia Grande Unit by adding a minimum of 10 new programs, facilities, or infrastructure by 2015; and on the South Padre Island Unit by increasing public awareness of these opportunities.

Discussion: The majority of Refuge visitation is for wildlife observation and photography. Because the Refuge recently added the Bahia Grande and South Padre Island units, there are additional opportunities to further enhance these important public uses. Additional facilities and services are needed to deal with the ever-increasing demand for this type of wildlife-related ecotourism in the LRGV. Visitor safety is a top priority for the Refuge in the design, integrity, and maintenance of visitor service facilities and programs.

Strategy 1: Write and implement a Visitor Services Plan by **2011**. ***Units: All.***

Strategy 2: Revise and update Refuge species lists, such as the Watchable Wildlife List, and create a butterfly checklist and a plant brochure by **2010**. ***Units: All.***

Strategy 3: Inspect annually, all visitor service facilities and areas such as boardwalks, trails, roads, photo blinds, parking, and observation areas for potential safety hazards. Repair facilities, as needed, to eliminate safety hazards. **Ongoing; *Units: All.***

Strategy 4: Pave Lakeside Wildlife Drive to improve motorized vehicle and bicycle access to the Osprey Overlook trailhead area by **2012**. ***Unit: L.***

Strategy 5: Pave the parking lot and renovate the observation deck at the Osprey Overlook trailhead area and an accessible pathway to the trailhead of Lakeside Trail South (Alligator Pond Trail). **2012; *Unit: L.***

Strategy 6: Complete the back-country hike-and-bike trail system to include informational kiosks along the trails and a leaflet describing wildlife observation opportunities. **2010; *Unit: L.***

Strategy 7: Improve (e.g., re-pave) and maintain the Buena Vista access road (i.e., the three-mile section from the FM 106 intersection north to the Refuge visitor center) by working with Cameron County and TXDOT to improve public access to the Refuge visitor center and wildlife drives. **2010; *Unit: L.***

Strategy 8: Improve or create wildlife observation and photography opportunities by constructing additional photo blinds and observation platforms, or installing webcams at locations of representative Refuge habitat types by **2012**. ***Units: L, B.***

Strategy 9: Provide a bicycle rental program in partnership with the Friends of Laguna Atascosa NWR to improve access to more remote wildlife viewing locations (e.g., Kidney Pond) not accessible by motorized vehicles. **2012; *Units: L, B.***

Strategy 10: Develop an informational kiosk, boardwalk, observation deck and tower, and canoe and/or kayak launch site adjacent to the TXDOT parking area along SH 48, bordering the Bahia Grande Unit in partnership with TXDOT and others. **2010; *Unit: B.***

Strategy 11: Establish a visitor contact station and wildlife drive on the Bahia Grande Unit by **2015**. ***Unit: B.***

Strategy 12: Establish a minimum of four hike-and-bike trails, including paved parking lot and informational kiosk, at select access points off of SH 48 and SH 100 on the Bahia Grande Unit by **2012**. ***Unit: B.***

Strategy 13: Establish a Refuge informational exhibit and seasonal staff presence at the South Padre Island World Birding Center (SPI-WBC) in partnership with the South Padre Island Economic Development Corp. **2010; *Unit: S.***

Strategy 14: Develop a video, in partnership with the SPI-WBC or other partners, to enhance wildlife observation and photography opportunities. **2010; *Unit: S.***

Strategy 15: Establish "eBird Trail Tracker" kiosk or equivalent computer system at the SPI-WBC and at the Laguna Atascosa Unit visitor center to report bird observations. **2010; *Units: L, S.***

Strategy 16: Develop videos describing wildlife observation opportunities on the Laguna Atascosa and Bahia Grande Units. **2010; *Units: L, B.***

Strategy 17: Update the Refuge Web site to include bilingual wildlife observation and photography information, such as unique Valley specialty species (e.g., butterflies, birds), by **2010**. ***Units: All.***

Strategy 18: Evaluate visitor service facilities (e.g., trails, boardwalks, observation decks) and programs to update, improve, replace, or eliminate, as needed. **Ongoing; *Units: All.***

Strategy 19: Evaluate the need to change recreational fee program on the Laguna Atascosa Unit and evaluate the need to initiate public entrance fee collection on the Bahia Grande Unit. No public entrance fees will be required on the South Padre Island Unit per the 1999 Refuge Expansion Plan. **2011**

Strategy 20: Develop a minimum of four new programs (e.g., beginner digital nature photography, beginning butterfly watching, bird sound identification) by **2015**. ***Units: All.***

Strategy 21: Evaluate geocaching as a method of encouraging Refuge visitation for wildlife observation and photography. If appropriate and compatible, establish online geocaching links on the Refuge Web site and provide Refuge geocaching links to recognized, reputable geocaching Web sites by **2011**. ***Units: All.***

Environmental Education and Interpretation

Environmental education (EE) programs are offered year-round serving diverse student populations, from pre-K through university level, and the general public. Interest in Refuge environmental education programs from school districts in Cameron and Willacy counties and from local universities is high as the Refuge is part of the curriculum of many of these institutions. Based on national or State educational standards, the Refuge will offer curriculum-based environmental education programs to advance public awareness and knowledge of key issues and resources of the Refuge. Interpretation programs promote a better understanding and appreciation for the natural and cultural resources and their management on Refuge lands and waters.

People Objective 4: Increase curriculum-specific EE program attendance by 15–20 percent over current levels by 2018, with an emphasis on reaching diverse student audiences, which

will lead to a greater understanding and appreciation for the fish, wildlife, plants, and their habitats within coastal south Texas.

Discussion: There are nine school districts in the vicinity of the Laguna Atascosa Unit; however, relatively few educators bring classes to Laguna Atascosa or request classroom programs. One reason is a lack of information about what kinds of programs the Refuge offers and another is that existing programs do not always conform to science testing standards. Developing and implementing educational programs that may be used with or without Refuge staff assistance may encourage more teachers to use the Refuge for science and environmental based curricula. In addition, there are opportunities to provide improved outdoor classroom activities on the Laguna Atascosa Unit and new opportunities on the Bahia Grande and South Padre Island Units, focusing on the Brownsville and Point Isabel Independent School District (ISD) and the University of Texas at Brownsville.

Strategy 1: Write and implement a Visitor Services Plan by **2011**. ***Units: All.***

Strategy 2: Convert old display area in visitor center into a multipurpose room to be used for interpretive and educational programs (e.g., school groups), public meetings, and other presentations. **2010; *Unit: L.***

Strategy 3: Develop sea turtle, endangered species, bird adaptation, and wetland EE programs, in accordance with State curriculum standards, for elementary and high schools in partnership with local ISDs by **2010**. ***Units: All.***

Strategy 4: Conduct at least one "Project Wild," or equivalent, session or teacher workshop annually to prepare educators to incorporate the Refuge as an outdoor classroom for their students. **Ongoing; *Units: L, B.***

Strategy 5: Develop educational packets and lesson plans, in accordance with State curriculum standards, about Refuge habitats that can be used by educators on Refuge field trips with minimal staff assistance. **Ongoing; *Units: L, B.***

Strategy 6: Apply for grants to fund Refuge field trips and obtain EE supplies in partnership with Friends of Laguna Atascosa, local ISDs, and other partners. **Ongoing; *Units: L, B.***

Strategy 7: Establish a visitor contact station and a research field station (in partnership with local universities and ISDs) as a facility for conducting outdoor classroom activities at Bahia Grande by **2015** (*See also: People Objective 3; Strategy 11*). ***Unit: B.***

Strategy 8: Provide ADA-compliant restroom facilities at two locations on the Bahia Grande Unit for school groups engaged in outdoor classroom activities by **2011**. ***Unit: B.***

Strategy 9: Construct new visitor center to new Service standard, including land acquisition of a suitable site (e.g., 35 or more acres) along FM 106, near the current intersection of General Brant Road and Buena Vista Road by **2020**. ***Unit: L.***

Strategy 10: Develop interpretive programs in a digital format (e.g., CD/DVD, MP3, etc.) for use on the Refuge (e.g., podcasts, geocaching, Web site checklists) by **2012**. The programs will be available in hard copy at the Visitor Center or downloadable online on the Refuge Web site. ***Units: All.***

Strategy 11: Evaluate all existing and future Refuge programs and materials to ensure they are ADA-compliant. **Ongoing; *Units: All.***

People Objective 5: Increase interpretive program attendance by 10 percent over current levels by 2018, improve or update more than 50 percent of existing written interpretive materials, and add at least 20 interpretive materials, facilities, specialty vehicles, or infrastructure over the life of this plan to better inform and accommodate visitors of all ages and abilities—leading to a greater understanding and appreciation of the unique resources of the Refuge.

Discussion: A primary goal of the Refuge System is connecting people with nature. Many of the interpretive facilities, programs, signs, brochures, exhibits, and kiosks are 10–20 years old. The material in some cases is out-of-date or inaccurate, some of the facilities and programs do not meet ADA (Americans with Disabilities Act) guidelines and regulations, and many signs and observation structures need to be updated to present a better image of the Service to the public and enhance their visit to the Refuge. Signage will be bilingual (i.e., English and Spanish) and/or include international symbols, and interpretive materials (e.g., brochures, leaflets) will have bilingual components.

Strategy 1: Develop an interpretive plan as part of the Visitor Services Plan by **2011**. ***Units: All.***

Strategy 2: Renovate existing visitor center restrooms to be ADA-compliant or construct new ADA restroom facilities by **2011**. ***Unit: L.***

Strategy 3: Acquire ADA-compliant tour vehicle (e.g., tram or 4x4 van) by **2010**. ***Unit: L.***

Strategy 4: Install an ADA-compliant restroom facility along Bayside Wildlife Drive (e.g., at the Redhead Ridge parking lot). **2010; *Unit: L.***

Strategy 5: Add or update interpretive panels focusing on wetlands habitats at popular visitor locations, including Alligator Pond, Osprey Overlook, Pelican Lake, Bahia Grande, and SH 100 pullout area west of Laguna Vista. **2012; *Units: L, B.***

Strategy 6: Update or replace existing interpretive panels along Bayside Wildlife Drive by **2010**. ***Unit: L.***

Strategy 7: Install directional signs and install an informational kiosk for Whitetail Trail (Management Unit 1) by **2010**. ***Unit: L.***

Strategy 8: Develop an interpretive brochure, flyer, or audio/visual material that describes the wildlife resources and habitats on the South Padre Island Unit, in partnership with Cameron County Parks Division and others. **2010; *Unit: S.***

Strategy 9: Update or add entrance and informational signage at appropriate Refuge entrance locations. **2010; *Units: All.***

Strategy 10: Develop partnership and volunteer support of South Padre Island World Birding Center (SPI-WBC). **2010; *Unit: S.***

Strategy 11: Update Refuge brochure, bird checklist, and other popular brochures and flyers. **2010; *Units: All.***

Strategy 12: Replace interpretive panels at visitor center kiosk and improve or enhance accessibility of the wildlife observation area adjacent to the kiosk. **2010; *Unit: L.***

Strategy 13: Complete map and/or fact sheet for new hike-and-bike trail system (*See also: People Objective 3, Strategy 6*). **2010; *Unit: L.***

Strategy 14: Review and update all current interpretive programs to include basic principles of interpretation, to incorporate principles of universal design (e.g., accessibility), and to reflect Service themes and messages. **2010; *Unit: L.***

Strategy 15: Create new guided bird tours, walks, and interpretive programs for the Bahia Grande and South Padre Island units to include basic principles of interpretation, incorporate principles of universal design (e.g., accessibility), and to reflect Service themes and messages. **2010; *Units: B, S.***

Strategy 16: Provide guided canoe and/or kayak tours and tram tours in partnership with the Friends of Laguna Atascosa NWR. **2010; *Units: L, B.***

Strategy 17: Evaluate the feasibility of establishing at least one self-guided interpretive canoe and/or kayak paddling trail by **2012**. ***Units: L, B.***

Strategy 18: Interpret Refuge-specific historical or cultural resources through interpretive panels, brochures, or other media by **2014**. ***Units: All.***

People Objective 6: Present a minimum of five special public outreach events annually and a minimum of 12 annual presentations, monthly news releases, or Web-based outreach articles, with an emphasis on reaching local residents, to foster increased public appreciation and ownership of the Refuge and its role in the local community.

Discussion: To achieve many of the Refuge's objectives, community support and public involvement are needed. Community involvement and visitation on the Refuge by local residents has primarily consisted of very specific user groups (e.g., hunters and anglers). Encouraging local communities and more diverse user groups to become involved in Refuge programs and wildlife-dependent activities promotes an open exchange of ideas and instills a sense of local pride and ownership toward the Refuge. Currently, the Refuge is best known in the local area for its Ocelot Conservation Festival, held annually in February. Refuge staff organize an annual Christmas Bird Count and participate in National Wildlife Refuge Week activities. Presenting additional large-scale events; making monthly informational presentations to community, civic, and special interest groups; and improving the Refuge's Web site will enhance the outreach program, leading to greater awareness of Refuge wildlife resources, programs, and visitor use opportunities among local residents and nature tourists.

Strategy 1: Develop and implement at least five special annual events (or partner with existing events) such as Ocelot Conservation Festival, Christmas Bird Count, National Fishing Day, National Wildlife Refuge Week, International Migratory Bird Day, and Teacher Appreciation Weekend. **Ongoing; *Units: All.***

Strategy 2: Involve tourist boards and Chambers of Commerce in program development and promotion; develop and supply Refuge informational brochures and flyers to Chambers of Commerce, hotels, and visitor information centers by **2010**. **Ongoing *Units: All.***

Strategy 3: Update current Refuge Web site to include appropriate links to the Friends group and partners by 2010. **Ongoing; *Units: All.***

Strategy 4: Train and involve all staff to present programs for a combination of government, civic, sporting, and interest groups on a variety of Refuge-related topics and issues; include information about the economic and wildlife-dependent recreational benefits that the Refuge provides. **Ongoing**; ***Units: All.***

Strategy 5: Continue developing partnerships with hotels, businesses, media outlets, and Cameron County Parks and Recreation Department to educate residents, tourists, and recreational anglers about sea turtle nesting on local beaches. **Ongoing; *Unit: S.***

Strategy 6: Develop and purchase supplies and obtain an interchangeable, portable exhibit, representing all units of the Refuge and its varied management programs, goals, and recreational opportunities by **2010**. ***Units: All.***

Strategy 7: Develop news releases for local and State newspapers, magazines, and other media outlets, as needed. **Ongoing; *Units: All.***

White-tailed hawks. Illustration: Ram Papish

5. Implementation and Monitoring

Refuge objectives in this CCP are intended to be accomplished during the next 15 years. Many of the specific management activities for Laguna Atascosa NWR will require the development of step-down management plans. Implementation of new management activities and major resource projects will be phased in as described within the step-down plans and will be contingent upon funding, staffing, regional and national Service directives. This section identifies staffing and funding needs; step-down management plans; partnership opportunities; and plan monitoring, evaluation, amendment, and revision.

5.1 Funding and Personnel

The following staffing lists show current and proposed additional staff needed to fully implement the CCP. If all proposed positions are filled, the Refuge could carry out all aspects of the CCP. If some positions are not filled, some aspects of the CCP cannot be completed or will take longer to complete, delaying the accomplishment of the objectives and strategies of this CCP.

Current Staff

The Refuge has a current staff of 17 permanent full-time employees assigned or stationed at the Refuge:

Title	Grade	Program
Wildlife Refuge Manager	GS-13	Management
Supervisory Wildlife Refuge Specialist	GS-11/12	Management
Wildlife Refuge Specialist	GS-09	Management
Administrative Technician	GS-07	Administration
Office Assistant	GS-05	Administration
Wildlife Biologist	GS-09/11	Biology
Wildlife Biologist	GS-09/11	Biology
Maintenance Mechanic	WG-09	Maintenance
Maintenance Worker	WG-08	Maintenance
Maintenance Worker	WG-08	Maintenance
Supervisory Park Ranger (LE/Refuge)†	GS-11	Law Enforcement
Park Ranger (LE/Refuge)†	GS-09	Law Enforcement
Park Ranger (LE/Refuge)†	GS-09	Law Enforcement
Park Ranger (Interpretation)†	GS-05/07	Visitor Services
Forestry Technician (Engine Boss)†	GS-06/07	Fire
Forestry Technician (Firefighter) †	GS-03/04/05	Fire
Forestry Technician (Firefighter)†	GS-03/04/05	Fire

† South Texas Refuge Complex (STRC) positions stationed at Laguna Atascosa NWR.

Proposed additional staff needed to fully implement the CCP

The staffing requirements identified in this CCP would increase staff levels as shown. If all positions are filled, the Refuge could carry out all aspects of the CCP. If some positions are not filled, all aspects may not be completed or those completed may be done over a longer time. Staffing and funding are expected to be accomplished over the 15-year life of the plan. Proposed positions are as follows:

Title	Grade	Program
Wildlife Refuge Specialist	GS-09/11	Management
Wildlife Refuge Specialist	GS-05/07/09	Management
Clerk Typist/Receptionist	GS-04/05	Administration
Biological Technician (Wildlife)	GS-05/07	Biology
Biological Technician (Wildlife)	GS-05/07	Biology
Engineering Equipment Operator	WG-09/10	Maintenance
Maintenance Mechanic	WG-09	Maintenance
Work Leader/Supervisor	WL-07/08 or WS-07/08	Maintenance
Tractor Operator	WG-05/06	Maintenance
Laborer	WG-04/05	Maintenance
Laborer (Custodial)	WG-03	Maintenance
Park Ranger (Interpretation)†	GS-09/11	Visitor Services
Park Ranger (Interpretation)†	GS-05/7/9	Visitor Services
Supervisory Park Ranger (LE/Refuge)†	GS-12	Law Enforcement*
Park Ranger (LE/Refuge)†	GS-11	Law Enforcement*
Park Ranger (LE/Refuge)†	GS-11	Law Enforcement*
Park Ranger (LE/Refuge)†	GS-11	Law Enforcement*
Park Ranger (LE/Refuge)†	GS-11	Law Enforcement*
Park Ranger (LE/Refuge)†	GS-05/07/09	Law Enforcement*
Park Ranger (LE/Refuge)†	GS-05/07/09	Law Enforcement*
Additional Seasonal employees (0.5 time FTEs):		
Park Ranger (Interpretation)†	GS-05	Visitor Services
Park Ranger (LE/Refuge)†	GS-05	Law Enforcement
Forestry Technician (Firefighter) †	GS-05	Fire
Forestry Technician (Firefighter)†	GS-05	Fire

† South Texas Refuge Complex (STRC) positions stationed at Laguna Atascosa NWR.

** The International Association of Chiefs of Police Deployment Model for Refuge Law Enforcement calls for 18 Refuge Law Enforcement Officers (LEOs) and 3 supervisory LEOs in the STRC. For Laguna Atascosa NWR, to meet these recommendations and to address future staffing needs, at least five additional LEO positions are needed. Supervisory LEOs should be GS-0025-12 series, LEO positions should be GS-0025-11 series, and all positions should have 25 percent Administratively Uncontrollable Overtime (AUO) authorized and funded.*

Funding

Total annual budget (k) for the Refuge varies depending on the Service priorities for the resource projects each year and the national and regional allocation of funds. These figures do not include fire, law enforcement, or visitor services positions. The following is a general breakdown of the current annual operation budget of the Refuge:

Table 2. Funding Categories and Average Annual Funding (Fiscal Years 2003–2007)

Fund Category	2003	2004	2005	2006	2007
O&M - 1261 (General)	703.7	702.5	594.0	340.2	451.9
O&M - 1263 (Visitor Services)				108.4	141.9
MMS - 1262 (Base Funds)				203.8	260.3
MMS - 1262 (Annual Maintenance)	510.1	460.0	94.7	104.9	152.7
Duck Banding - 1231			5.0	10.0	10.0
Volunteer Program				5.0	5.0
Fire - 9252					
Total:	1213.8	1162.5	693.7	772.3	1021.8
					average* 972.8

Description of fund categories:

- 1261 funds include Refuge operations and personnel salaries. (Operations include annual fixed costs; salaries, mandatory training and/or travel, as well as annual operations of Refuge programs.) 1261 funding, once distributed, may be used at the discretion of management to accomplish the Refuge mission. In fiscal year 2006, this category was divided into sub-categories representative of each major program area.
- 1262 funds include annual maintenance, salaries, and deferred maintenance, and some fixed costs such as utilities, gasoline, diesel, and equipment repair.
- 1263 funds are for Visitor Services costs and salaries.
- 9252 funds are fire management funding for prescribed fire operations. Funds for fighting wildfires are in a special account and distributed on an "as needed" basis.

* Funding does not include those positions stationed at the Refuge from STRC-level staffing and programs such as Law Enforcement, Fire, or Visitor Services.

In fiscal years 2003–2007, Laguna Atascosa NWR had an average annual operation budget of $972,800 to fund all operating expenses, including salaries, benefits, maintenance, and fixed costs. This CCP proposes to accomplish more resource protection, habitat management, and significant expansion of visitor services opportunities, which can only be realized through the following additional estimated funding:

Table 3. Annual Operation Budget (k) needed for full implementation of the CCP

Annual Funding, Including all Staffing and Operational Costs**	Current Average (2003–2007)	Additional Estimated Costs†	Total Estimated Funds/Year‡
	972.8	719.0	1,691.8

*** Operational costs include: salaries, benefits, annual maintenance, and fixed costs.*

† Additional estimated costs include new staff assigned to the Refuge and funded out of the Refuge budget (11 positions). Other new staff (11 positions) are not included in these estimated costs since they are funded by the STRC but stationed at the Refuge. Salaries, benefits (+35 percent), and overhead costs (+25 percent) apply to each position. This estimate is based on starting salary pay grades for each pay series (GS-General Schedule, LE Law Enforcement, WG-wage grade) using the 2007–2008 OPM (Office of Personnel Management) Salary Tables. This estimate does not include the one-time startup costs of $30–50k associated with each new permanent employee ($330–550k for 11 new staff). This estimate does not include any funding for specifically targeted projects.

‡ This estimate does not take into account future grade and step increases, cost of living increases, and general inflation, which may increase the level of funding needed in future years.

5.2 Step-down Plans

The CCP is intended as a broad umbrella plan, providing a general framework for the future management of Refuge resources and visitor services, such as wildlife and habitat management, threatened and endangered species protection and recovery, wildlife-dependent recreational opportunities, law enforcement, visitor safety, and maintaining and building partnerships. Step-down plans provide specific guidance and strategies to the Refuge manager to implement the overall goals and objectives in the CCP. The following list outlines the relevant step-down plans for Laguna Atascosa NWR.

Habitat Management Plan

The Habitat Management Plan (HMP) was developed in 2008 to prioritize species habitat management activities and provide specific guidance and decision-making processes towards implementing appropriate strategies to achieve stated habitat objectives in support of the Refuge's vision. Although this CCP provides fairly specific objectives and strategies, the HMP further defines and expands the level of specificity for accomplishing important habitat management tasks. This plan incorporates several earlier habitat management plans (1988).

Visitor Services Plan (VSP)

The VSP, a step-down plan of the CCP, addresses visitor services management goals. The plan contains chapters on hunting, fishing, interpretation goals, informational signs, outreach, traffic management, volunteer coordination, Friends group coordination, and environmental education goals and objectives. The VSP is anticipated to be completed within one year after completion of the CCP. Separate step-down plans may be necessary to further address specific topics. Anticipated completion is 2011.

Inventory and Monitoring Plan

The Inventory and Monitoring Plan (Wildlife Inventory Management Plan) was developed in 1988 in conjunction with the Refuge's Master Plan. This plan details inventory policy, describes habitat and survey unit needs, and establishes specific inventory procedures for various wildlife and species groups. This plan is expected to be revised as a result of CCP implementation and to be updated accordingly by 2010.

Waterfowl and Migratory Bird Disease Contingency Plan

This plan was last updated in 1996 and describes protocols for disease surveillance, disease response, appropriate contacts, logistical considerations, biological considerations, and other guidance. This plan is anticipated to be revised by 2010.

Fire Management Plan

The South Texas Refuge Complex (STRC) FMP, which includes Laguna Atascosa NWR, provides fire management policy, guidance, options, activities, and specific strategies for the use of prescribed fire and wildfire in accomplishing the goals and objectives of the STRC Plan. The goals of the STRC Fire Plan are to 1) ensure that firefighter and public safety is the priority goal of the program and that all fire management activities reflect this commitment; 2) protect life, property and other resources from unplanned fire; 3) use fire as a tool, where applicable, to accomplish resource management objectives; and 4) to develop and implement a process to ensure the collection, analysis, and application of fire management information needed to make sound management decisions.

Fire management objectives include efforts to 1) protect from fire all important scientific, cultural, historic, and prehistoric sites; visitor facilities, administrative sites and Refuge housing; 2) restore and perpetuate habitat important to migratory and native wildlife species by maintaining a diversity of plant communities; 3) prevent human-caused wildfires; and 4) educate the public regarding the role of prescribed fire within the STRC. The STRC FMP was completed in 2009 and incorporates elements of Laguna's FMP, completed in 1988.

Hunting Plan

This plan, which is a chapter of the Visitor Services Plan, addresses specific aspects of the Refuge hunting program, defining the species to be hunted, season structure, hunting methods, and applicable Refuge-specific hunting regulations. The Refuge currently conducts an annual recreational and management firearms and archery hunt for white-tailed deer and feral hogs. This plan was completed in 1986 and was revised in 2004 to include exotic nilgai antelope. Nilgai were imported into Texas as game animals, readily reproduced, and established free-ranging populations. The hunting plan is anticipated to be revised by 2011 to improve hunting opportunities on the Refuge.

Recent guidance (*Service Memorandum of December 22, 2006*) provides for addressing the cumulative impacts of proposed hunting. Five elements to be addressed are:

1. the anticipated direct and indirect impacts of proposed hunt on wildlife species;
2. anticipated direct and indirect impacts of proposed action on Refuge programs, facilities, and cultural resources;
3. anticipated impacts of proposed hunt on Refuge environment and community;

4. other past, present, proposed, and reasonably foreseeable hunts and anticipated impacts; and
5. anticipated impacts if individual hunts are allowed to accumulate.

In addition to these five elements, a cumulative impacts analysis must consider the impacts of a proposed action within a geographic context.

Environmental Management Plan

The Environmental Management Plan for the South Texas Refuge Complex (which includes Laguna Atascosa NWR) was completed in 2005. The plan provides guidance on pollution prevention, hazardous materials management, emergency response and coordination with State and other Federal agencies regarding spill responses, general environmental compliance, recycling, environmental management, and environmental education.

Integrated Pest Management Plan

This plan describes biological, mechanical, or chemical methods for the most effective eradication and control of invasive weeds and woody vegetation and specific pests, including those damaging crops without affecting the natural resources of the area. The Integrated Pest Management Plan will provide complete and specific methods and timelines for preventing introductions, prioritizing (including rapid response), surveying, mapping, monitoring, and treating or controlling invasive plants, feral animals, or other non-native species. Treatment methods may include mechanical clearing, chemical applications, prescribed burning, biological control, or combinations of these, depending on the particular pest species. This plan will dovetail with the national management plan (EO 13112) and comply with State mandates requiring prevention, monitoring, and control or eradication of invasives. The Integrated Pest Management Plan for Laguna Atascosa is anticipated to be completed by 2011.

Oil Spill Contingency Plan

The Oil Spill Contingency Plan for Laguna Atascosa was developed in collaboration with the Texas General Land Office. The plan was revised in 2003 and details specific procedures and scenarios for dealing with oil spills and oiled wildlife, particularly birds. Potential oil spill issues at Laguna Atascosa may involve pipeline ruptures or barges in the Harlingen Ship Channel, which run across the Laguna Unit and in the Gulf Intracoastal Waterway. The plan also provides details on the containment, logistical contacts, clean-up, and priorities for Service response in the event of an oil spill.

Safety Management Plan

This plan delineates station responsibilities, procedures, and preventative actions necessary to make station facilities and operations comply with Federal occupational health and safety standards and other applicable regulations for the public and employees. Consistent with the policies of the Service, the main purpose of the plan is to ensure a safe and healthful work environment for each employee and to provide for general employee welfare in terms of providing training, awareness, and adequate provisions for prompt assistance should any employee(s) be injured on the job. Laguna's Safety Management Plan was completed in 1990 and is anticipated to be updated in 2009.

5.3 Partnership Opportunities

There are many opportunities to collaborate with Federal, State, and local governmental agencies and NGOs, private landowners, and other groups for the benefit to the area's natural resources. One example of an on-going, mutually beneficial, partnership is the Bahia Grande Wetland Restoration Partnership. About 75 partners, such as the Brownsville Navigation District, University of Texas-Brownsville, Ocean Trust, and the Natural Resources Conservation Service, have donated money and in-kind services for one of the largest wetland restoration projects in the United States.

Other partnership opportunities include:

- Establishing partnerships with private landowners and conservation organizations could result in the development of conservation agreements or other options for land protection, habitat enhancement, restoration, and opportunities for continuity of management.
- Strengthening partnerships with the TPWD, GLO and Cameron and Willacy counties.
- Strengthening partnerships with academic institutions such as The University of Texas at Brownsville to coordinate research needs and activities.

Maintenance of existing programs and facilities has been the full-time endeavor of the existing staff. To enhance current programs and initiate new activities, additional staff positions will be required. In the future, establishing agreements with private landowners, conservation organizations, educational institutions, and other government agencies through MOUs is expected to result in the development of conservation agreements or other options for land protection, habitat enhancement and restoration, and opportunities for wildlife research.

5.4 Monitoring and Evaluation

Where possible, the CCP identifies and incorporates monitoring and evaluation activities as objectives or strategies. Specific guidelines for monitoring and evaluation will vary by program and will be included in the appropriate step-down plan. As new information becomes available through baseline data, research, or outcomes of management projects, the appropriate Refuge program would be adjusted accordingly. Step-down plans, including the monitoring and evaluation sections, would require periodic review, program evaluation, and adjustments, as necessary.

This CCP will be a useful working document for present and future managers. Periodic review and evaluation, and the addition of information, will be required to achieve effective implementation of the CCP, as Refuge programs change over time.

5.5 Plan Amendment and Revision

The Laguna Atascosa NWR Refuge manager will refer to the CCP annually to ensure station priorities and work guidance is on track with the CCP. Appropriate staff members will be assigned tasks and projects identified in the CCP to accomplish the objectives stated in the plan. The Refuge manager will review the CCP at least every five years to determine if it needs revision. Any necessary revisions will be incorporated into the plan, with proper public participation. The CCP will be revised no later than 2022.

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Glossary

Appropriate Use: A proposed or existing use on a refuge that is a wildlife-dependent recreational use as identified in the 1997 Refuge System Improvement Act (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) or a use that contributes to the fulfillment of refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997.

Bilingual: Refers to standard, Latin-American Spanish. Because of the Refuge's close proximity to Mexico and Latin America, in the LRGV, the population is over 85 percent Hispanic (*2000 U.S. Census Bureau*).

Biological Diversity: The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and communities and ecosystems in which they occur.

Biological Integrity: Biotic composition, structure and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms, and communities.

Biotic Community: A set of plants, animals, and microorganisms occupying an area interacting directly or indirectly with each other and their physical environment.

Colonia: A residential area along the Texas-Mexico border that may lack some of the most basic living necessities, such as potable water and sewer systems, electricity, paved roads, and safe and sanitary housing -*Texas Secretary of State.*

Compatible Use: A wildlife-dependent recreational use or any other proposed or existing use on a refuge that will not materially interfere with or detract from the purposes of the refuge or the National Wildlife Refuge System mission.

Comprehensive Conservation Plan: A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates.

Cultural Resources: The remains of sites, structures, or objects used by people in the past.

DDE (dichlorodiphenyldichloroethylene): A by-product of DDT that may persist in the environment for many years. The main sources of DDE on Laguna Atascosa NWR come from irrigation drainwater and floodwater inflows.

DDT (dichlorodiphenyltrichloroethane): A pesticide used to control insects in agriculture that remains in the environment for many years. Its use was banned in the United States in 1972 because of damage to wildlife but is still used in some countries (e.g.,

Mexico). DDT collects in the fatty tissues of birds, fish, and other animals and may affect the nervous system and cause cancer. Exposure to humans can occur through the consumption of fish, wildlife, and leafy vegetables, and by breathing or swallowing contaminated soil, such as near landfills. The main sources of DDT on the Refuge come from irrigation drainwater and floodwater inflows.

Ecological Integrity: The relative intactness of biotic and abiotic components and their interrelated structure and function within a given ecosystem.

Ecosystem: Dynamic and interrelating complex of plant and animal communities and their associated non-living environment.

Ecosystem Approach: A strategy or plan to protect and/or restore the natural function, structure, and species composition of an ecosystem, recognizing that all components are interrelated.

Ecosystem Management: Management of an ecosystem that includes all ecological, social, and economic components, which make up and/or affect the whole of the system.

Ecotourism: Nature-based tourism or "responsible travel to natural areas that conserves the environment and improves the welfare of local people." - *As defined by Conservation International.*

Endangered Species: A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.

Environmental Assessment: A systematic analysis to determine if proposed Federal actions would result in a "significant effect on the quality of the human environment," thereby requiring either the preparation of an environmental impact statement (EIS) or a determination of a "Finding of No Significant Impact" (FONSI).

Exotic: A non-native plant or animal species to the ecosystem under consideration that is introduced intentionally or unintentionally.

Fallout: An ornithological term that refers to an event when birds, during migration over or near large expanses of water (e.g., Gulf of Mexico), become exhausted and drop down onto land to find shelter from strong winds (e.g., storm or cold fronts) and food before continuing their migratory journey.

Federal Trust Species: Important fish and wildlife resources that the U.S. Fish and Wildlife Service is specifically mandated to protect, including migratory birds, threatened species, endangered species, interjurisdictional fish, marine mammals, and other species of concern (16 U.S.C. 3772; PL-109-294).

Focal Species: Wildlife species that are a subset of priority species and that represent larger guilds of species that use habitats in a similar way.

Geocaching: An outdoor recreational activity consisting of finding locations or objects using GPS (global positioning system) technology such as a handheld GPS unit. The

coordinates are programmed into the device, which leads to the location or object. Geocaching can be a tool to improve wildlife observation and photography opportunities on refuges. There are many types of geocaching, but only "virtual caching" and "mystery caching," or similar types of geocaching, may be appropriate on refuges. These types of geocaching usually do not impact natural or cultural resources, as they involve simply visiting the GPS locations on the refuge to observe wildlife, take photographs, or view an interesting site (e.g., cultural, historical, or natural).

Guild (or Species Guild): An aggregation or group of species that tend to use the same kinds of resources for feeding or reproduction (e.g., feeding sites, nesting sites) in a similar manner. Species guilds are useful in helping to focus wildlife and habitat management efforts or in environmental impact studies.

Invasive Plant Species: A non-native plant to the ecosystem under consideration that lacks natural controls and tends to aggressively dominate the plant community, often forming extensive mono-cultures. Invasive species generally reduce the diversity and health of ecosystems when they become dominant.

Loma: Spanish word meaning hill. This term refers to the clay dunes of the Rio Grande delta within eastern Cameron County, Texas. Lomas range in size from less than one acre to over 100 acres in size. They occur within coastal "salt prairie" and because they are higher in elevation than the surrounding flats, contain islands of native habitats, including dense brush.

National Wildlife Refuge: A designated area of land or water or an interest in land or water within the Refuge System, such as refuges, wildlife management areas, waterfowl production areas, and other areas under Service jurisdiction for the protection and conservation of fish and wildlife and plant resources. A complete listing of all units of the Refuge System may be found in the current "Annual Report of Lands under Control of the U.S. Fish and Wildlife Service."

National Wildlife Refuge System: All lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish, wildlife, and plant resources.

PCBs (Polychlorinated biphenyls): PCBs are a mixture of chemicals that no longer produced in the United States but still occur in the environment. PCBs are either oily liquids or solids that are used as coolants and lubricants in transformers, capacitors, and other electrical equipment. PCBs were banned in the United States in 1977 because of their harmful health effects and persistence in the environment. PCBs bind in soils, bottom sediments, and organic particles and are taken up by small organisms and fish in water. PCBs accumulate in fish and marine mammals and can become highly concentrated in their tissues. The main dietary sources of PCBs are fish (e.g., sport fish caught in contaminated lakes or rivers), meat, and dairy products. PCBs are also carcinogenic. The main sources of PCBs on Laguna Atascosa NWR come from irrigation drainwater and floodwater inflows.

Priority Public Use: Wildlife-dependent recreational uses involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation are the priority general public uses of the Refuge System and shall receive priority consideration in Refuge planning and management.

Priority Species: Wildlife or plant species that include Federal trust species such as migratory birds, threatened species, endangered species, inter-jursdictional fish, marine mammals, and other species of concern. Priority species also include rare, declining, or species of management concern that are on lists maintained by natural heritage programs, State wildlife agencies, other Federal agencies, or professional, academic, and scientific societies, and those mentioned in landscape-level or other conservation plans.

Public Use: Any use of the Refuge System by the public, including but not limited to wildlife-dependent recreation and other appropriate uses.

Recreational Use - Other: A recreational use of the Refuge System that is not one of the six wildlife-dependent recreational uses and that may only be allowed if it is both appropriate and compatible.

Resaca: A local term describing the unique natural meander belts or old channels of the Rio Grande (ox-bow lakes), usually filled by rainwater or used as water delivery systems in Cameron County, Texas. They were formed as the Rio Grande shifted course within its delta. The word "resaca" is believed to come from a conjunction of two words "rio" and "seco"which means "dry river."

Riparian: Of or relating to land lying immediately adjacent to a water body and having specific characteristics of that area, such as riparian vegetation. A stream bank is an example of a riparian area.

Scoping: A process for identifying the "scope of issues" to be addressed by a CCP. Involved in the scoping process are Federal, State, local agencies, private organizations, and individuals.

Stakeholders: Those agencies, organizations, groups, and individuals of the public, having an interest or stake in an organization's program and that may be affected by its implementation.

Threatened Species: A plant or animal species listed under the Endangered Species Act that is likely to become endangered within the foreseeable future.

Trust Species: *(See Federal Trust Species).*

Visitor Services: Any program provided by the Service that is specifically or predominately designed for the participation or benefit of visitors.

Visitor Services Plan (VSP): A step-down management plan containing specific strategies formulated to meet the visitor services goals and objectives of the refuge's CCP that integrates wildlife-dependent and other recreational uses on a refuge or group of refuges.

Watershed: The entire land area that collects and drains water into a stream or stream system.

Wetland: Areas such as lakes, marshes, ponds, swamps, or streams that are inundated by surface or groundwater that is enough to support plants and animals that require saturated or seasonally saturated soils.

Wildlife: The terms "fish," "wildlife," and "fish and wildlife" mean any wild member of the animal kingdom, whether alive or dead, regardless of whether it was bred, hatched, or born in captivity, including its parts, products, eggs, or offspring.

Wildlife-dependent Recreational Use: A use of a refuge that involves hunting, fishing, wildlife observation and photography, and environmental education and interpretation, as identified in the National Wildlife Refuge System Improvement Act of 1997.

Winter Texan: Travelers who migrate to Texas for the winter, usually for several months at a time. For some, Texas is an established winter home. The Lower Rio Grande Valley is the top destination for Winter Texans (*Source: Texas Department of Economic Development and Tourism Division*).

Abbreviations and Acronyms

ACW	Arroyo Colorado Watershed
ADA	Americans with Disabilities Act
ARPA	Archaeological Resources Protection Act
ATV	All-terrain vehicle
CBRA	Coastal Barrier Resources Act
CCP	Comprehensive Conservation Plan
CKWRI	Caesar Kleberg Wildlife Research Institute
CONANP	Comisión Nacional de Áreas Naturales Protegidas, Secretaría de Medio Ambiente y Recursos Naturales
CORPS	U.S. Army Corps of Engineers
DDE	Dichlorodiphenyldichloroethylene *(pesticide by-product)*
DDT	Dichlorodiphenyltrichloroethane *(pesticide)*
EA	Environmental Assessment
EE	Environmental Education
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FM	Farm-to-Market *(State secondary road)*
FMP	Fire Management Plan
FONSI	Finding of No Significant Impact
FR	Federal Register
FTE	Full-time Employee
FUDS	Formerly Used Defense Site
GIS	Geographic Information Systems *(mapping)*
GPS	Global Positioning System
HMP	Habitat Management Plan
ISD	Independent School District
LE	Law Enforcement
LEO	Law Enforcement Officer

LRGV	Lower Rio Grande Valley of Texas *(Valley) - comprised of Cameron, Hidalgo, Starr, and Willacy counties in the southernmost portion of Texas*
MMS	Maintenance Management System
MOUs	Memoranda of Understanding *(Agreements)*
MPAs	Marine Protected Areas *(EO 13158)*
NAWMP	North American Waterfowl Management Plan
NEPA	National Environmental Policy Act
NGOs	Non-governmental Organizations
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service *(U.S. Department of Agriculture)*
NWR	National Wildlife Refuge
O&M	Operation and Maintenance
ORVs	Off-road vehicles *(e.g., dune buggies, 4x4s, ATVs, cars, trucks, motorcycles)*
PCBs	Polychlorinated biphenyls
PIF	Partners in Flight
RNA	Research Natural Area
RRP	Refuge Roads Program
SAFE	State Areas for Wildlife Enhancement
SH	State Highway
SHC	Strategic Habitat Conservation
SORT	Special Operations Response Team
Service	U.S. Fish and Wildlife Service
SPI-WBC	South Padre Island - World Birding Center
STRC	South Texas Refuge Complex *(includes Laguna Atascosa, Lower Rio Grande Valley, and Santa Ana National Wildlife Refuges)*
TEDs	Turtle Excluder Devices
T/E	Threatened and Endangered Species
TNC	The Nature Conservancy
TPWD	Texas Parks and Wildlife Department
TXDOT	Texas Department of Transportation
USDA	United States Department of Agriculture

USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
UT	University of Texas
Refuge System	National Wildlife Refuge System
Valley	Lower Rio Grande Valley of Texas *(LRGV)*
VSP	Visitor Services Plan
WHSRN	Western Hemisphere Shorebird Reserve Network
WUI	Wildland Urban Interface

Laguna Atascosa National Wildlife Refuge Comprehensive Conservation Plan
Environmental Assessment

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Draft Environmental Assessment: Laguna Atascosa National Wildlife Refuge Comprehensive Conservation Plan

1. Purpose of and Need for the Proposed Action

Prepared under the authority of the National Environmental Policy Act of 1969 (NEPA), this environmental assessment (EA) analyzes potential management alternatives for the development of a Comprehensive Conservation Plan (CCP) for Laguna Atascosa National Wildlife Refuge (NWR) (Refuge). The overall purpose of the CCP is to ensure the continued conservation, management, and enhancement of important fish and wildlife habitats of the United States for the benefit of present and future generations.

The purpose of comprehensive planning is to "...provide the refuge manager with a 15-year management plan for the conservation of fish, wildlife, and plant resources and their related habitats, while providing opportunities for compatible wildlife-dependent recreational uses. The CCP, when fully implemented, should achieve refuge purposes; help fulfill the Refuge System mission; maintain and, where appropriate, restore the ecological integrity of each refuge and the Refuge System; help achieve the goals of the National Wilderness Preservation System; and meet other mandates." (Service Manual 602 FW 3). The National Wildlife Refuge Improvement Act of 1997 (Act) mandates that the U.S. Fish and Wildlife Service (Service) prepare a CCP for each national wildlife refuge and to involve the public in the planning process. In the Act, Congress identified six priority wildlife-dependent recreational uses (public uses) on national wildlife refuges: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Compatible recreational activities are those that will not have a detrimental effect upon fulfillment of the purposes of the refuge or the National Wildlife Refuge System. The purposes of Laguna Atascosa NWR are:

- *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds," Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended;*
- *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..." Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended;*
- *"...for the development, advancement, management, conservation and protection of fish and wildlife resources...", Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and "...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude...", Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.*

The proposed CCP is a 15-year management plan based on the purposes for which the Refuge was created and the Refuge System mission, and it incorporates an integrated, ecosystem approach focused on the long-term protection, enhancement, and restoration of the unique fish and wildlife resources of Laguna Atascosa NWR. This plan will meet the Service's legal and regulatory responsibilities and establish and maintain excellent partnerships in accomplishing the plan's goals and objectives. It is designed to guide development of opportunities for Refuge

visitors to enjoy safe, educational, and compatible wildlife-dependent outdoor recreational activities on the Refuge. The CCP is also intended to address the needs of the local community and the public regarding overall management of the Refuge.

1.1 Decision to be Made

Based on the assessment described in this document, the Service will select an alternative to implement the CCP for Laguna Atascosa NWR. The final CCP will include a Finding of No Significant Impact (FONSI), which is a statement explaining why the selected alternative will not have a significant effect on the quality of the human environment. This determination takes into consideration the Service's and Refuge System mission, the purpose(s) for which the Refuge was established, and other legal mandates. Assuming no significant impact is found, implementation of the CCP will begin and will be monitored annually and revised when necessary.

1.2 Planning Area

Laguna Atascosa NWR lies along the Gulf of Mexico at the southern tip of Texas, along the northeastern edge of Cameron County and the southeastern edge of Willacy County. The 97,007-acre Refuge consists of four main units:

1) Laguna Atascosa Unit, 45,187 acres;
2) Bahia Grande Unit, 21,762 acres;
3) South Padre Island Unit, 24,808 acres; and
4) Coastal Corridor Unit, 5,250 acres.

Within these main units, 8,546 acres are part of the Lower Rio Grande Valley NWR, but they are administratively managed by the Refuge for a total of 97,007 acres. The Laguna Atascosa Unit and main headquarters is located approximately 16 miles east of the town of Rio Hondo, Texas, on Farm-to-Market Road (FM) 106. The Bahia Grande Unit is sandwiched between State Highway (SH)100 and SH 48, about one mile west of Port Isabel, Texas. The South Padre Island Unit, which consists of 21 separate tracts, is located on the north end of South Padre Island, with the first Refuge tract location about 9.5 miles north of the Town of South Padre Island, Texas. The Coastal Corridor Unit currently includes eight separate tracts, including two conservation easements, located between the Laguna Atascosa Unit and the Bahia Grande Unit (*Figure 1*). Laguna Atascosa NWR is part of the South Texas Refuge Complex (STRC), which includes the Lower Rio Grande Valley NWR and Santa Ana NWR.

1.3 Authority, Legal Compliance, and Compatibility

The Service developed this draft CCP/EA in compliance with the Refuge Improvement Act of 1997 and Part 602 of the U.S. Fish and Wildlife Service Manual (National Wildlife Refuge System Planning). The actions described within this draft CCP/EA also meet the requirements of NEPA. The CCP's overriding consideration is to carry out the purpose for which the refuges were established. The refuge purposes are stated in the laws that established each refuge and provided the funds for acquisition. Fish and wildlife management is the first priority in refuge management, and the Service allows and encourages public use (wildlife-dependent recreation) as long as it is appropriate and compatible with, or does not detract from, the refuge's mission and purposes.

Appropriate Refuge Uses Policy

The Appropriate Refuge Uses Policy (Service Manual 603 FW 1) clarifies and expands on the compatibility policy (Service Manual 603 FW 2.10D), which describes when refuge managers should deny a proposed use without determining compatibility. When a use is determined to be appropriate, the refuge manager must then determine if the use is compatible before it may be allowed on the refuge. With the exception of the six wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation), and the take of fish and wildlife under State regulations, the refuge manager will decide if a new or existing use is an appropriate refuge use. If an existing use is not appropriate, the refuge manager will eliminate or modify the use as expeditiously as practicable. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility.

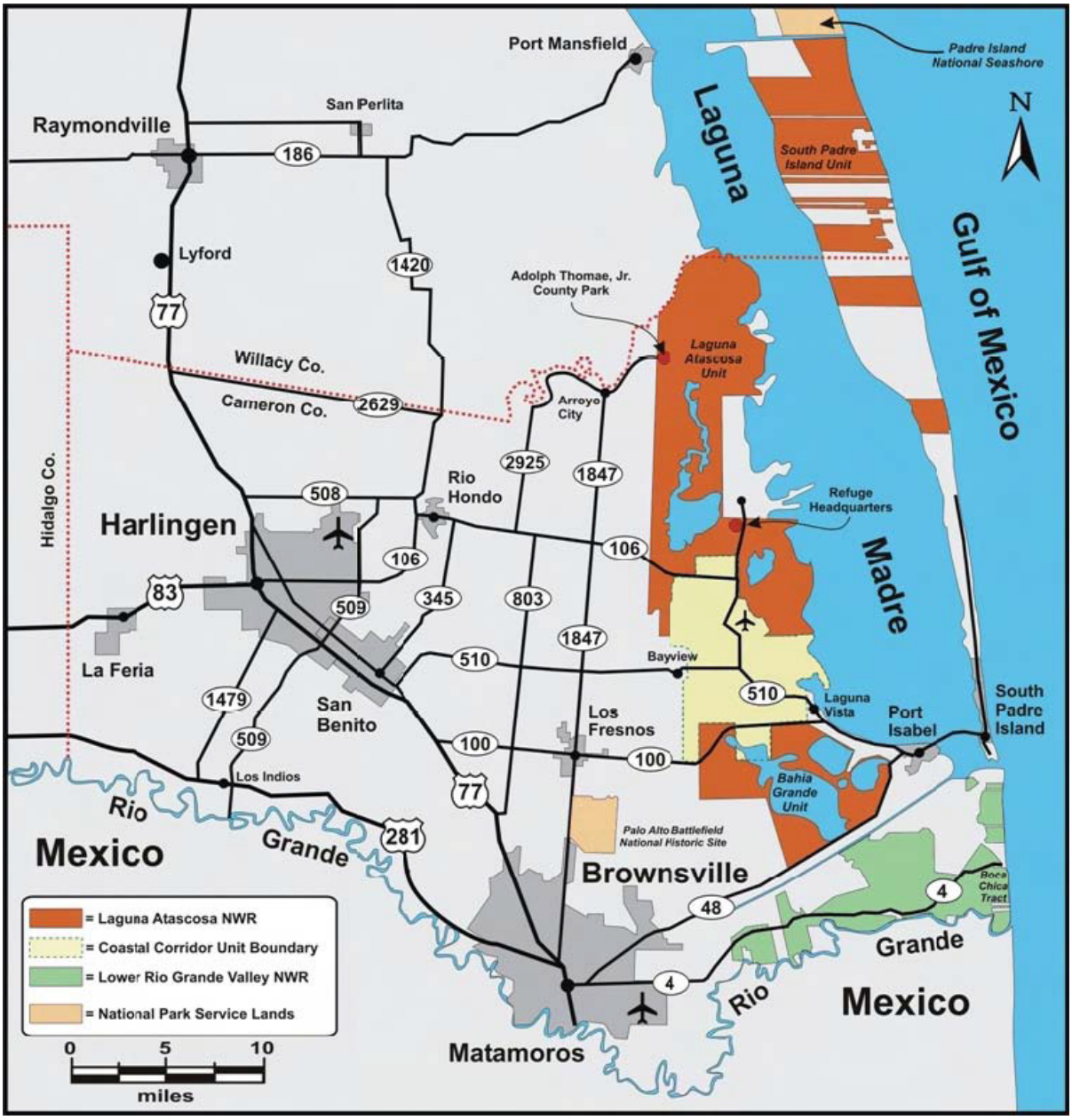

Figure 1. Laguna Atascosa NWR and Vicinity

Compatibility

The National Wildlife Refuge System Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, states that national wildlife refuges must be protected from incompatible or harmful human activities to ensure that Americans can enjoy Refuge System lands and waters. Before activities or uses are allowed on a national wildlife refuge, the uses must be found to be compatible. A compatible use is one that *"...will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuges."* In addition, *"...wildlife-dependent recreational uses may be authorized on a refuge when they are compatible and not inconsistent with public safety."* Compatibility determinations have been completed and are provided in Appendix D of the draft CCP/EA.

In addition, the Laguna Atascosa NWR Refuge Expansion and Conceptual Management Plan (1999) outlines a plan for Refuge expansion by adding additional lands or conservation easements from willing sellers, up to 108,127 acres of land adjacent to or near the existing 45,187-acre Laguna Atascosa NWR, bringing the Refuge's acquisition goal to 153,314 acres. The actions described in the Expansion Plan have been incorporated into the objectives and strategies of the CCP.

1.4 Public Involvement and Issues

To begin the CCP process, a comment period notification was published in the *Federal Register* on July 19, 2004 (69 FR 43010-11). Draft documents and other relevant information for public review was made available at the Refuge headquarters. Internal pre-planning meetings were held at the Refuge to discuss concerns, issues, and opportunities for the future of the Refuge. Four "open house" public scoping meetings were held between February 28 and March 8, 2005, at Raymondville, Brownsville, Harlingen, and South Padre Island to solicit initial public input and involvement during the early stages of CCP development. Scoping notices with a mail-in response form were mailed to interested individuals, governmental officials, State, Federal, and local agencies, organizations, academia, local libraries, the media, and other stakeholders. The State of Texas (i.e., Texas Parks and Wildlife Department) was also invited to participate as a partner in the planning process on April 12, 2004. All comments received from the public were reviewed and considered throughout the CCP process. A total of 104 people attended these meetings, and 65 written comments were received during the meetings, via mail-in response forms, and from the *Federal Register* notice.

The CCP has identified 10 issue areas (See Section 2.6 of the CCP) that incorporate the gamut of all issues, concerns, and opportunities raised by the public, internally, and by other interested parties,

However, major issues raised by the public centered on:

1. a desire to expand or improve popular activities such as hunting, fishing, bicycling, and hiking (22 percent of comments);
2. support for the continued conservation of rare wildlife resources such as ocelot cats and sea turtles (33 percent);
3. improving infrastructure and access to the Refuge by improving facilities and access roads (20 percent);
4. improving educational and interpretive programs (17 percent); and
5. increasing staffing and funding to improve the quality of the Refuge experience overall (3 percent).

Remaining issues, which were primarily Service issues, concerns, and opportunities, are incorporated into the management direction and are addressed in the environmental consequences section of the EA.

Table 1. Issues Comparison between Alternatives

Major Issues by Public	Alternative A (No Action)	Alternative B (Proposed)	Alternative C (Optimize Public Uses)
Expand Public Use Opportunities	Any expansions would occur opportunistically	Improvement of priority public uses, particularly hunting, fishing, bicycling, hiking, non-motorized boat access, and wildlife observation to meet demand when compatible with wildlife needs and Refuge purposes; expansion of research efforts and dynamic partnerships	Expand and emphasize all priority public uses, particularly hunting, fishing, and access to all Refuge areas to the maximum extent when compatible; based on public comments
Conserve Wildlife and Habitats	Continue ongoing wildlife and habitat management per existing plans and activities	Integrated biological and habitat management efforts with landscape level and ecosystem level plans; emphasis on protection and monitoring of Federal trust species and priority species and their habitats	Continue ongoing wildlife and habitat management per existing plans and activities
Improve Infrastructure and Facilities	Minor upgrades and facilities improvement, as needed and as existing budgets allow	Addition of over 6 miles of hike-and-bike trails; 1 auto tour route; 2 separate parking areas; new visitor center at Laguna Atascosa Unit; visitor contact and research station at Bahia Grande	Several additional miles of auto tour routes, 7 hike-and-bike trails and associated parking areas; visitor contact station; all primarily at Bahia Grande
Improve Environmental Education and Interpretation	Continue ongoing programs and activities	Increase curriculum-specific EE programs and interpretation; hold a minimum of 5 special events and at least 12 presentations annually with an emphasis on reaching diverse student audiences	Continue ongoing programs and activities
Increase Staffing and Funding	Existing staffing (17 permanent positions) and facilities; any additional staff and facility expansions would occur opportunistically	Addition of 20 permanent, full-time staff to existing base, and four seasonal staff	Base funding and staffing would increase by 4 positions (Outdoor Recreation Planner and 3 Park Rangers)

2. Description of Alternatives

Proposed alternatives comprise different approaches or management scenarios for the future management of the Refuge. The alternatives are developed to address the significant issues, concerns, and problems identified by the Service during the public scoping process for the development of the CCP.

2.1 Formulation of Alternatives

Alternatives are different approaches or combinations of management actions designed to achieve a refuge's purposes and vision, the goals identified in the CCP, the goals of the Refuge System, and the mission of the Service. Alternatives are formulated to address the significant issues, concerns, and problems identified by the Service and the public during public scoping. A wide variety of alternatives were considered in this EA. Several alternatives were considered but eliminated from detailed analysis, as discussed in the subsequent text.

Three alternatives are identified and analyzed in detail in this assessment. These alternatives represent different approaches or management scenarios for the future protection, restoration, and management of the Refuge's fish, wildlife, plants, habitats, and other resources, as well as compatible wildlife-dependent recreation. Refuge staff assessed the biological conditions of Refuge habitats and analyzed the external relationships affecting each Refuge unit. This information contributed to the development of Refuge goals and, in turn, helped formulate the alternatives. Each alternative was evaluated based on how much progress it would make and how it would address the identified issues related to wildlife, habitat, and people as described previously and shown in *Table 1.*

2.2 Alternatives Considered But Eliminated From Further Analysis

A wide variety of alternatives were considered in this EA based on public and internal scoping. Those alternatives eliminated from detailed consideration along with the rationale for their dismissal are as follows:

- **Emphasize Threatened and Endangered Species.** The Refuge considered concentrating all efforts and resources on maintaining and enhancing the specific habitats required by endangered or threatened species. Although the Refuge provides resident, wintering, migratory, and nesting habitat for rare or declining species, including federally-listed (threatened or endangered) species, this proposed alternative was not analyzed in detail because current and proposed management actions include sufficient measures to ensure that these species are adequately addressed. In addition, it is the Service's responsibility to conserve and protect threatened and endangered species regardless of which alternative is implemented.
- **Emphasize Waterfowl and Migratory Birds.** One of the primary purposes of the Refuge is providing habitat for wintering waterfowl and other migratory birds. Approximately 38,000 acres or roughly 40 percent of Refuge lands are wetlands and mudflats (excluding the Laguna Madre) that is good habitat for waterfowl and migratory birds. In addition, the Refuge is restoring approximately 10,000 acres of tidal wetlands on the Bahia Grande Unit. As the Refuge provides important habitat for a variety of other wildlife, such as the endangered ocelot, jaguarundi, and aplomado falcon, a singular management focus on waterfowl and migratory birds alone would not meet Service goals for natural biological diversity and ecological integrity. Regardless of the alternative, the Service is still mandated to protect and provide habitat for

waterfowl and migratory birds. Additionally, a complete focus on waterfowl and migratory bird use is therefore likely to hamper or eliminate other important wildlife management needs or directives, such as invasive species control or endangered species concerns. Therefore, this alternative was eliminated from further analysis.

- **Custodial Management Approach.** Some feel that the Refuge should not manage species or habitat, as well as allow public uses. This alternative would call for no active management strategies and close the Refuge entirely to the public through closure of all access roads. Traditional wildlife-dependent public uses (e.g., hunting, fishing, wildlife observation) would be discontinued. Refuge management would consist of allowing access for limited purposes only such as fence repairs that affect adjacent landowners and road maintenance on those roads needed by Refuge staff to conduct minimal enforcement and ensure Refuge closure. However, Refuge management would be reduced to a custodial state. All wildlife populations would remain as is, under existing environmental conditions. There would be no need for staffing or facility improvements. All other Refuge programs, including resource protection and management, endangered species management, and environmental education and interpretation, would be discontinued. As a result, there would be a decrease in the current level of funding and staff. This alternative was rejected primarily because the Refuge is required to comply with legal mandates such as, but not limited to, invasive species management (Executive Order 13112), migratory bird management (Executive Order 13186), and the Endangered Species Act (ESA). Habitat management is often needed to maintain the quality of habitat for wintering waterfowl and breeding birds, and to recover endangered species. Refuge management of habitats and wildlife is necessary to offset or compensate for significant losses of habitat. In the Lower Rio Grande Valley, about 95 percent of the native vegetation has been altered or cleared for agriculture and urban development. Selection of this alternative would also hinder the Refuge's ability to implement all aspects of the Refuge System Improvement Act of 1997, since selection of this alternative would not allow compatible wildlife-dependent recreational activities, as stated in that Act.

2.3 Alternatives Analyzed In Detail

The following alternatives were developed to comply with NEPA and to provide ways to represent a number of issues, concerns, and opportunities that were identified during the public and internal scoping process. Though the alternatives may have a different emphasis, habitat maintenance, restoration, and preservation are common elements of each alternative. The alternatives are intended to provide a range of public uses and access and respond to significant issues or concerns identified during the planning process.

Alternative A: No Action - Current Management

This alternative represents the status quo or no change from current management of the Refuge. Existing or traditional Refuge management practices would continue as they have in the past, including habitat management (prescribed burning, chemical and mechanical invasive species control), water management, biological inventory, facility and equipment maintenance, staffing, law enforcement, public uses (e.g., hunting, fishing, wildlife observation, hiking, etc.), research, and environmental educational outreach. The Refuge would continue its emphasis on wintering and migratory bird habitat and Federal trust species, and on maintaining public uses of existing facilities and education programs at current levels. Current

base funding and staffing levels would allow the Refuge to focus on limited habitat management and maintenance projects.

Habitat Management

Habitat Management on the Refuge primarily consists of prescribed burning and invasive species control (using chemical and mechanical methods). Habitat management includes re-establishment of native brushland in appropriate areas. This is helping to provide more habitat for species such as the ocelot and other brushland wildlife. The Refuge also maintains grasslands for those species that depend on them. Occasional prescribed burns help maintain healthy grassland habitats. Prescribed fire is used as a tool to reduce hazardous fuels (e.g., wildland urban interface), control exotic species, reduce brush encroachment, and enhance or maintain important habitats such as the coastal prairie and savannah (e.g., Gulf cordgrass) for mottled ducks, aplomado falcons, and wintering waterfowl.

Water Management

The water levels on the Refuge's main wetland features, such as Laguna Atascosa and Cayo Atascosa, are controlled seasonally to optimize habitat for a variety of wildlife needs, but primarily for wintering waterfowl and migrating shorebirds. The Refuge manipulates seasonal water levels to provide the greatest variety of uses for such bird groups as dabbling ducks, wading birds, shorebirds, and other waterbirds. Maintaining tidal flows within the Bahia Grande wetland system is one important water management priority, as is the need to provide more freshwater sources on the Refuge. Freshwater is usually in low supply, and the Refuge is completely dependent upon rainwater, irrigation drainage, and surface runoff; therefore, a major objective of water management on the Refuge is to provide a quality, year-round abundance of freshwater for resident and migratory wildlife.

Research

Since so little native habitat remains in south Texas, the Refuge is a center for ecological and conservation research and investigation, particularly endangered felids. The largest U.S. population of ocelots is located on the Refuge, making it the center for ocelot conservation and recovery. Other research, conservation, and management activities involve sea turtles, mottled ducks, reddish egrets, aplomado falcons, shorebirds, amphibians, and other migratory birds.

Wildlife/Threatened and Endangered Species Management

It is the Service's responsibility to conserve and protect federally-listed species; therefore, all Refuge activities are evaluated for compliance with the Endangered Species Act, as amended, through the Intra-Service consultation process. Management actions to protect and provide habitat for endangered species such as the ocelot include monitoring the health of the populations and brush restoration activities. Prescribed burning to maintain grassland habitat and nest monitoring activities are undertaken to benefit aplomado falcons. From March through mid-July, sea turtle patrols are undertaken, and endangered sea turtle eggs and/or nests are moved to protected areas to facilitate nesting success. Ongoing involvement with the North American Waterfowl Plan and the U.S. Shorebird Conservation Plan would continue at present levels with no foreseeable increases. Law enforcement activities would continue at current levels. Additional biological information on Refuge resources would be obtained through incidental surveys, and appropriate information would not necessarily be available to evaluate current management decisions.

Recreation Opportunities/Public Use

Popular public uses on the Refuge include wildlife observation: watching butterflies at the Visitor Center's butterfly garden or birding—the Refuge is one of the 10 best birding areas in the nation. Other popular public uses include photography, walking trails (self-guided interpretive and other trails), scheduled guided tours, school group tours, camping (limited to Adolph Thomae Jr. County Park, which is located on the Laguna Atascosa Unit), boating and fishing (limited to Adolph Thomae Jr. County Park, South Padre Island Unit, and San Martin Lake on the Bahia Grande Unit), hunting, picnicking, bicycling, and the auto tour routes. There are two auto tour routes and six walking trails varying in length from the 1/8-mile Kiskadee Trail to the 15-mile Bayside Wildlife Drive Loop. The annual white-tailed deer hunt is the largest public hunt in south Texas and continues to be very popular. Each year, 800 archery permits are issued, and a drawing is held to select 235 firearm permits. The Refuge's visitor services staff and volunteers also provide on-site educational outreach, as well as participate in several off-site science, nature, outdoor, career, and birding festivals and shows within the community each year.

Currently, 130,000 to 150,000 people visit the Refuge annually. Recreational opportunities would continue to be limited to traditional programs under existing approved public use plans. Public use facilities would remain essentially the same except for maintenance or necessary improvements. Currently, there are approximately 16.5 miles of public roads and 10.4 miles of interpretive trails. New directional or interpretive signs would not be installed, and except for addressing safety hazards, facilities would not be upgraded. Viewing opportunities for wildlife would be limited to these existing facilities. The current headquarters facilities would remain the same despite anticipated increases in visitation. This alternative would result in access roads remaining as they are with only minor upgrades or maintenance. Any improvements to the visitor services program would occur opportunistically. The Service would rely primarily on efforts by local and State agencies, organizations, universities, and volunteers to accomplish some of its resource protection and monitoring needs.

Cultural and Historic Resources Management

There are no active management activities for cultural and historic resources other than protection of cultural and historical resources. For any projects or activities that involve surface disturbance, archaeological surveys are performed per Service policy.

Oil and Gas Activities and Other Developments

On the Laguna Atascosa Unit, the Federal government owns all of the subsurface mineral rights. Mineral rights on the Bahia Grande, Coastal Corridor, and South Padre Island units are primarily owned by private persons or third parties. The Federal government and the State of Texas have limited mineral right ownership on the Bahia Grande Unit. Currently, the only oil and gas infrastructure on the Refuge are natural gas pipeline rights-of-way. The Refuge receives numerous requests for oil and gas exploration for privately-owned mineral interests. The Refuge would continue to address oil and gas issues through established procedures at the STRC level for addressing all oil and gas activities (e.g., exploration, production, and transportation) on the Refuge.

Land Acquisition

The Laguna Atascosa NWR Refuge Expansion and Conceptual Management Plan (1999) outlines a plan to buy additional lands or conservation easements from willing sellers; up to 108,127 acres of land adjacent to or near the existing 45,187-acre Laguna Atascosa NWR, bringing the Refuge's acquisition goal to 153,314 acres. The acquisition area is limited to eastern Cameron County (around the Laguna Atascosa Unit and on South Padre Island north of Park Road 100) and Willacy County (South Padre Island).

Partnerships and Cooperative Relationships

The Service intends to continue fostering working relationships with local communities, governments, individuals, neighbors, conservation groups, and other organizations.

In summary, all management programs would continue as they have during the past several years. Although management activities will continue to have beneficial impacts on wildlife, continuing existing strategies and approaches at current levels would maintain existing habitat conditions over the long term. Managers would continue using existing management plans. The lack of publicly accepted goals and resource priorities (as proposed in the CCP) would make it more difficult for management to implement those priorities and obtain funding to make needed improvements.

Alternative B: Proposed Action - Implement CCP

This Alternative was based on public input and the best judgment of the planning team. This is the alternative that would best achieve Refuge purposes, vision, and goals and would best contribute to the Refuge System mission. Alternative B, with associated goals, objectives, and strategies, comprises the Comprehensive Conservation Plan for the Laguna Atascosa NWR.

Alternative B, which is the Service's proposed action, would adopt and implement the actions making up the Refuge's CCP. This includes an emphasis on all Federal trust species (e.g., migratory birds and federally-listed species) and priority species and their habitats within the Refuge, and invasive species control. This alternative also would improve and expand compatible public uses, improve and add new facilities, and enhance educational and outreach programs. The objectives and strategies detailed in the CCP would provide for short- and long-term conservation and enhancement of resources and values on the Refuge, above that of the current management scenario. With State and public input, the actions proposed within this alternative reflect a need to continue and enhance the major goals of resource management and protection, as well as to focus on connecting people with nature through improving the Refuge's environmental education and interpretation programs, and fostering dynamic partnerships.

This alternative will continue to use successful pre-existing Refuge management strategies, as well as a series of new planning strategies to protect, maintain, and restore native brushland, coastal prairies, wetlands, and other biotic communities on the Refuge for Federal trust and priority species. The continued survival of these important resources will keep a unique wildlife heritage for future generations to enjoy in south Texas. Long-range management objectives on the Refuge will be designed to sustain all resident wildlife, plants, and their respective habitats in perpetuity, as well as to provide for the needs of nesting, migratory, and wintering birds.

The Refuge habitat management program would involve implementing active management objectives and strategies such as those described in the CCP and the 2008 Habitat Management Plan. These elements include the hiring of additional biological staff and redirection of existing staff to undertake protection, enhancement, monitoring, and water level management activities. The Refuge's biological program, primarily through the addition of two biological technicians, would increase its emphasis on monitoring, protecting, and enhancing habitat for federally-listed species as well as other important fish and wildlife resources such as migratory birds and waterfowl.

In addition, long range objectives call for redoubling efforts to promote the Refuge and the Refuge System mission by providing the public with quality wildlife experiences through an improved visitor services program. A mix of existing uses and priority wildlife-dependent uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) as described in the CCP will be allowed.

Existing roads, parking areas, and related facilities would be maintained and improved as necessary to accommodate the high visitation of the Refuge. New roads and trails would be constructed on the Bahia Grande Unit. This includes hike-and-bike trails (up to four separate trails totaling over six miles), a wildlife drive, two parking areas, automobile pull-outs, and placement of informational kiosks and signs. A new visitor center is proposed at the Laguna Atascosa Unit, and a visitor contact station is planned for construction at the Bahia Grande Unit. The Refuge would gradually expand educational and outreach programs to meet the increasing visitation and public interest in Refuge environmental education programs. This includes a research field station to be built in conjunction with the Bahia Grande visitor contact station. Improvement of fishing opportunities are also proposed that would include seasonal wade-fishing access to the Laguna Madre at the Laguna Atascosa Unit and fishing access points at Bahia Grande. The hunting program is proposed to be improved to include additional opportunities for the public to hunt feral hogs, exotic nilgai antelope, doves, and quail. Opportunities for waterfowl hunting would also be explored at Bahia Grande. The cumulative impacts of any additional hunting activities will be addressed as part of the hunting chapter of the Visitor Services Plan, a step-down plan of the CCP.

Under this alternative, necessary funding, facilities, equipment, and staff (up to 11 permanent positions) would be added to the existing base. The objectives and strategies detailed in the plan would provide for short- and long-term (up to 15 years) conservation and enhancement of Refuge resources. Many of the management activities and wildlife-dependent recreational uses would require the development of step-down management plans. Implementation of specific management activities would be phased in over time as described in the appropriate step-down plans and would take into account an "adaptive management" approach.

Other management activities, such as cultural and historical resource management, oil and gas activities and other developments, and partnerships and cooperative relationships, will be the same as in Alternative A. With respect to land acquisition, additional activities proposed under this alternative are to coordinate land acquisition activities with the Lower Rio Grande Valley NWR to establish several wildlife corridors (Ranchito Corridor, South Coastal Corridor, Boca Chica Corridor, North Coastal Corridor, and North Valley Corridor) to establish connectivity between endangered ocelot populations.

Alternative C: Optimize Public Uses

This alternative was developed to address comments received during public scoping. Following the publication of the *Federal Register* "Notice of Intent to prepare a CCP," dated July 19, 2004 (69 FR 43010-11), four informal "open house" meetings held between February 28 and March 8, 2005. This alternative incorporates and emphasizes the public use activities identified by the public. In this alternative, the Refuge will concentrate efforts and resources on public uses to the maximum extent practicable when appropriate and compatible with the purposes of the Refuge.

Under this alternative, wildlife, habitat, or biological diversity activities would essentially be allowed to remain as is. Current base funding and staffing levels would increase by up to four positions (Outdoor Recreation Planner and three Park Rangers), more than the existing staffing level (as in Alternative A). The Refuge would specifically maximize recreational opportunities and conveniences to visitors. Traditional programs such as hunting and fishing would be expanded as much and as often as possible to accommodate these popular activities. For example, the archery hunt would be expanded to include hunting on Management Unit 7. Waterfowl hunting would be proposed for Bahia Grande, provided such a program complies with the stipulations set forth in the Pre-Acquisition Compatibility Determination. However, the cumulative impacts of any additional hunting activities will be addressed as part of the hunting chapter of the Visitor Services Plan. Wade-fishing is proposed at designated areas and during specific seasons along Bayside Wildlife Drive on the Laguna Atascosa Unit. The cumulative impacts of any additional fishing activities will be addressed as part of the fishing chapter of the Visitor Services Plan.

Currently, there are approximately 16.5 miles of auto tour roads and 10.4 miles of interpretive trails. Public use facilities, particularly roads and trails, would be expanded to provide convenient public access. For example, bay access points consisting of pedestrian walkways would be proposed at several locations, along with parking areas on the Laguna Atascosa Unit. Bahia Grande would be developed with at least one wildlife auto tour, at least seven hike-and-bike trails, a visitor contact station, and associated parking areas. Horseback riding would be proposed as well but likely only in areas that are safe from other non-horseback visitors to the Refuge. The Refuge would open up more areas of the Refuge to hunting for white-tailed deer, feral hogs, nilgai antelope, waterfowl, doves, and quail during the appropriate seasons. Additional designated fishing access points would be developed at Laguna Atascosa Unit (Management Unit 7), along Bayside Wildlife Drive and two areas on Bahia Grande, at San Martín Lake, and at the newly established Bahia Grande Channel entrance. New directional or interpretive signs would be installed along with all new trails, roads, parking areas, and other facilities to add to the demand for convenience by the public.

Other management activities, such as cultural and historical resource management, oil and gas activities and other developments, land acquisition, and partnerships and cooperative relationships, will be the same as in Alternatives A and B.

3. Affected Environment

The affected environment includes the wildlife habitats encompassing Laguna Atascosa NWR and any additional tracts under conservation easement or management responsibility. Currently, a total of 97,007 acres are under the management of the Refuge. A more detailed description of the affected environment can be found in Section 3.0 of the CCP for Laguna Atascosa NWR.

4. Environmental Consequences

This section analyzes and discusses the potential environmental effects or consequences that can reasonably expected by the implementation of each of the three alternatives described in Chapter 2 of this EA. For each alternative, the expected outcomes are portrayed through the 15-year life of the CCP.

This chapter identifies, describes, and compares the physical, biological, and human environment of the three alternatives proposed in this draft CCP/EA. Current management (Alternative A, the No Action Alternative) provides the basis for comparing the effects of the action alternatives (Alternatives B and C). The direct, indirect, and cumulative effects of each alternative are analyzed in this chapter.

Direct effects are the impacts that would be caused by the alternative at the same time and place as the action. **Indirect effects** are impacts that occur later in time or distance from the triggering action. **Cumulative effects** are incremental impacts resulting from other past, present, and reasonably foreseeable future actions, including those taken by Federal and non-federal agencies, as well as undertaken by private individuals. Cumulative impacts may result from singularly minor but collectively significant actions taking place over a period of time.

An analysis of the effects of management actions on the **physical environment** has been conducted for soils, water and air quality. Analysis of the effects of management actions on the **biological environment** has been conducted for vegetation, wildlife, and threatened and endangered species. Although all plant, animal and fish species on the Refuge are important, many species are not expected to experience any change—or at most, a negligible one—as a result of implementing any of the alternatives. For that reason, not all Refuge species are discussed in this chapter. An analysis of the effects on the **socioeconomic environment** has also been conducted, and ongoing and proposed projects and activities by the Refuge provide positive socioeconomic benefits through job creation (e.g., ecotourism), improving the quality of life, protection of natural resources, and recreational opportunities.

4.1 Definition of Terms

Impact Type

Beneficial impacts are those resulting from management actions that maintain or enhance the quality and/or quality of identified Refuge resources or recreational opportunities.

Adverse impacts are those resulting from management actions that degrade the quality and/or quantity of identified Refuge resources or recreational opportunities.

Duration of Impacts

Short-term impacts affect identified Refuge resources or recreational opportunities; they occur during implementation of the management action but last no longer.

Medium-term impacts affect identified Refuge resources or recreational opportunities and occur during implementation of the management action; they are expected to persist for some time into the future though not throughout the life of the CCP.

Long-term impacts affect identified Refuge resources or recreation opportunities; they occur during implementation of the management action and are expected to persist throughout the life of the CCP and possibly longer.

Intensity of Impact

Negligible impacts result from management actions that cannot be reasonably expected to affect identified Refuge resources or recreational opportunities at the identified scale.

Minor impacts result from a specified management action that can be reasonably expected to have detectable though limited effect on identified Refuge resources or recreation opportunities at the identified scale.

Moderate impacts result from a specified management action that can be reasonably expected to have apparent and detectable effects on identified Refuge resources or recreation opportunities at the identified scale.

Major impacts result from a specified management action that can be reasonably expected to have readily apparent and substantial effects on identified Refuge resources and recreation opportunities at the identified scale.

Context or Scale of Impact

Under the **local scale**, beneficial or adverse impacts on a given resource occur only at a specific project site or in its immediate surroundings and are relatively small in size (i.e., less than 15 acres).

For the **moderate scale**, beneficial or adverse impacts on a given resource occur beyond a specific project site but at a scale below that of the entire Refuge (i.e., 15-100 acres).

Under the **widespread scale**, beneficial or adverse impacts on a given resource extend beyond the moderate scale (i.e., greater than 100 acres).

4.2 Effects Common to All Alternatives

A few potential effects will be the same under each alternative and are summarized under the following categories: environmental justice climate change, refuge revenue sharing, land acquisition, cultural resources, other management, and other effects.

Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," was signed by President Clinton on February 11, 1994, to focus Federal attention on the environmental and human health conditions of minority and low-income populations, with the goal of achieving environmental protection for all communities. The order directed Federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority and low-income populations. The order is also intended to promote nondiscrimination in Federal programs substantially affecting human health and the environment, and to provide minority and low-income communities with access to public information and opportunities for participation in matters relating to human health or the environment.

None of the management alternatives described in this environmental assessment will disproportionately place any adverse environmental, economic, social, or health impacts on minority and low-income populations. Implementation of any action alternative that includes public use and environmental education is anticipated to provide a benefit to the residents residing in the surrounding communities.

Climate Change

The U.S. Department of the Interior issued an order in January 2001 requiring Federal agencies under their direction that have land management responsibilities to consider potential climate change impacts as part of long-range planning endeavors.

The increase in carbon within the Earth's atmosphere has been linked to the gradual rise in surface temperatures commonly referred to as global warming. In relation to comprehensive conservation planning for national wildlife refuges, carbon sequestration constitutes the primary climate-related impact to be considered in planning. The U.S. Department of Energy defines carbon sequestration as "…the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere…"

The land is a tremendous force in carbon sequestration. Terrestrial biomes of all sorts—grasslands, forest, wetlands, tundra, perpetual ice, and desert—are effective both in preventing carbon emissions and in acting as a biological "scrubber" of atmospheric carbon monoxide. The conclusions of the Department of Energy's report noted that ecosystem protection is important to carbon sequestration and may reduce or prevent the loss of carbon currently stored in the terrestrial biosphere.

Conserving natural habitat for wildlife is the heart of any long-range plan for national wildlife refuges. The actions proposed in this Draft CCP/EA would conserve or restore land and water, and would thus enhance carbon sequestration. This, in turn, contributes positively to efforts to mitigate human-induced global climate changes.

Land Acquisition

Funding for land acquisition from willing sellers within the approved acquisition boundary of the Laguna Atascosa NWR would come from the Land and Water Fund, the Migratory Bird Conservation Fund, or donations from conservation and private organizations. Conservation easements and leases can be used to obtain the minimum interests necessary to satisfy Refuge objectives if the staff can adequately manage uses of the area for the benefit of wildlife. The Service can negotiate management agreements with local, State, and Federal agencies, and accept conservation easements. Some tracts within the acquisition boundaries may be owned by other public or private conservation organizations. The Service would work with interested organizations to identify additional areas needing protection and provide technical assistance as needed. The acquisition of private lands is entirely contingent on the landowners and their willingness to participate.

Cultural Resources

All alternatives afford additional land protection and low levels of development, thereby producing little negative effect on cultural and historic resources. Potentially negative effects could include construction of new facilities and associated utilities. In most cases, these management actions would require review by the Service's Regional Archaeologist in coordination with the State of Texas Historical Preservation Office, as mandated by Section 106 of the National Historic Preservation Act. Therefore, the determination of whether a

particular action within an alternative has the potential to affect cultural resources is an ongoing process that would occur during the planning stages of every project.

Service acquisition of land with known or potential archaeological or historical sites provides two major types of protection for these resources: protection from damage by Federal activity and protection from vandalism or theft. The National Historic Preservation Act requires that any actions by a Federal agency that may affect archaeological or historical resources be reviewed by the State Historic Preservation Office, and that the identified effects be avoided or mitigated. The Service's policy is to preserve these cultural, historic, and archaeological resources in the public trust, and to avoid any adverse effects whenever possible.

Refuge Revenue-Sharing

Annual Refuge revenue-sharing payments to Cameron and Willacy counties would continue at similar rates under each alternative. If lands are acquired and added to the Refuge, the payments would increase accordingly.

Other Management and Effects

All management activities that could affect the Refuge's natural resources, including utility lines and easements, soils, water and air, and historical and archaeological resources, would be managed to comply with all laws and regulations. In particular, any existing and future oil and gas exploration, extraction, and transport operations on the Refuge would be managed identically under each of the alternatives. Thus, the impacts would be the same.

Each of the alternatives would have similar effects to negligible effects on soils, noise, transportation, human health and safety, children, hazardous materials, and aesthetic and visual resources.

Unavoidable Adverse Impacts

The selection of any alternative would have no unavoidable adverse direct or indirect impact on the environmental parameters evaluated in this environmental assessment. Any potential adverse effects identified in this assessment have been reduced with mitigation measures to the maximum extent possible.

Irreversible and Irretrievable Commitments of Resources

Most management actions identified in this document will require a commitment of funds that would then be unavailable for use on any other Service projects. At some point, commitment of funds to these projects would be irreversible, and once used, these funds would be irretrievable. Non-renewable or non-recyclable resources committed to projects identified in the CCP, such as fuel for Refuge vehicles, would also represent irreversible and irretrievable commitments of resources.

4.3 Analysis of Impacts by Resource

This section analyzes the direct, indirect, and cumulative environmental and social impacts or consequences that can be reasonably expected by the implementation of each of the proposed alternatives with respect to: *physical environment (soils, water, and air quality), biological environment (fish and wildlife habitat, migratory birds, threatened and endangered species), and socioeconomic environment (local population and economy, recreational and public use, archaeological and cultural resources, and aesthetic and visual resources (See also Table 2).*

Impacts on Air Quality

Alternative A

This alternative involves use of fire as a management tool on the Refuge, which would temporarily create localized air quality impacts. Prescribed fires would be managed and monitored in accordance with Service and local or State policy. Heavy equipment used for road maintenance, mowing, or erosion control might cause a slight, temporary profusion of particulate matter into the air. Under Alternative A, there would be some minor impacts to air quality from vehicle emissions (cars, boats, and machinery), but likely to a lesser degree than Alternatives B and C. No other management actions in this alternative would affect air quality to a significant degree. Habitat management involving prescribed burning will occur only under ideal weather conditions. Smoke management practices will be implemented during all burning events. An approved Prescribed Burn Plan, favorable weather conditions, and adequate firefighting resources all work together to prevent pervasive air pollution or from significantly affecting air and water quality.

Alternative B

Under Alternative B, there would be some minor impacts to air quality from vehicle emissions (cars, boats, and machinery) and local or temporary impacts from prescribed fire. The fire program would be managed and monitored in accordance with Service policy and in compliance with local and State air quality requirements. Burns would be scheduled to coincide with appropriate weather, humidity, and wind patterns to reduce impacts to air quality. Mechanical operations involving ground disturbance or mowing might cause a slight, temporary profusion of particulate matter into the air.

This alternative involves improving visitor services and facilities, which would increase the volume of traffic on the Refuge. There may also be a temporary decrease in air quality as a result of construction activities. Automobile traffic through the Refuge is not expected to increase to such levels that it would result in measurable pervasive air pollution. Therefore, implementation of this alternative would not significantly affect air quality in the area.

Alternative C

Alternative C involves expanding hunting, trails, and roads, which would increase the volume of traffic within most areas of the Refuge. There may be a decrease in air quality as a result of increased public visitation and/or recreational activities from expanded public uses or visitation. Automobile traffic through the Refuge may increase but likely not to such levels that it would result in measurable, pervasive air pollution. Nonetheless, air quality may degrade somewhat under this alternative.

Impacts on Water Quality

Alternative A

Freshwater is usually in low supply, and the Refuge is completely dependent upon rainwater, irrigation drainage, and surface runoff. Because the Refuge receives farmland and residential runoff water, water quality is an issue in some of the Refuge's major wetlands, such as Laguna Atascosa Lake (Wells et al. 1988); therefore, a major objective of water management on the Refuge is to provide a quality, year-round abundance of freshwater for resident and migratory wildlife.

Herbicide used to control and manage invasive plant species will occur only under ideal weather conditions. Acceptable application practices and guidelines will be implemented during all prescription events and under an approved plan to prevent affecting water quality. Water quality is not expected to be degraded by implementation of this alternative.

Alternative B

There would be some short-term degradation of water quality during infrastructure maintenance or heavy equipment use in wetland systems. However, in the longer term, such projects serve to protect the quality of the watershed by protecting or facilitating natural wetland cycling processes. Water quality is expected to improve upon implementation of the CCP.

Alternative C

There would be some short-term degradation of water quality during infrastructure maintenance or new construction in or near wetlands. This may increase levels of contaminants or other non-natural materials entering the watershed. Maximizing public uses is likely to increase the potential for contaminants on the Refuge, such as trash, fuels, or oils.

Impacts on Soils

Alternative A

The soils on the Refuge, in general, are alluvial clays on the mainland and sandy soils on South Padre Island, which are very susceptible to wind and water erosion. Under alternative A, erosion problems will continue, especially on the lomas on the Bahia Grande Unit. Off-road vehicle use (e.g., ATVs) and the establishment of roads or trails is causing dune erosion on South Padre Island.

Alternative B

New roads and trails would be constructed on the Bahia Grande Unit. This includes hike-and-bike trails (up to four separate trails totaling over six miles), a wildlife drive, two parking areas, automobile pull-outs, and placement of informational kiosks and signs. A new visitor center is proposed at the Laguna Atascosa Unit and a visitor contact station is planned for construction at the Bahia Grande Unit. These activities will result in direct impacts to soil but are considered minimal. Habitat restoration activities on the lomas of the Bahia Grande Unit will help reduce the effects of erosion.

Alternative C

This alternative presents the greatest potential for impacts to soils due to a higher level of planned facility, road, and trail development. At these levels, it is anticipated that soil impacts may be moderate and of longer duration than Alternatives A and B.

Impacts on Habitat

Alternative A

Implementing the No Action Alternative would assume no significant changes in Refuge operations. This alternative offers a strong level of protection for the natural resources of the Refuge without a planned long-term management approach. The restoration and protection of

uplands, wetlands, and/or migratory wintering and nesting habitats would continue at current levels, with the exception of Bahia Grande. At Bahia Grande, efforts are currently under way to restore tidal circulation to the tidally-influenced wetland systems there. The habitat management activities implemented on the Refuge are designed to improve habitat conditions for wildlife (primarily wintering and migratory birds). By adopting the No Action Alternative, the Refuge would anticipate no significantly negative impacts to the overall landscape. However, while the existing management would have no negative effects on biological resources, a lack of a strategic context of publicly accepted goals and objectives would make it difficult for Refuge managers to implement resource priorities and justify annual budget requests. Indirectly, this could slow progress toward improving habitat and wildlife conditions. Lack of a long-term plan may also eventually leave Refuge management unprepared to adequately address the potential wildlife impact(s) of future human developments surrounding Refuge lands and to control the spread of invasive or exotic species.

Alternative B

This alternative offers an integrative, publicly-involved, long-term management approach for the Refuge's wildlife populations, habitats, priority public uses, and educational and interpretive opportunities. It involves the expansion of existing efforts for habitat restoration, protection, and enhancement. Active management would primarily involve enhancing existing and adding additional wetlands and water management systems for the benefit of Federal trust resources. Coastal prairie and savannah habitat would be managed with prescribed fire to prevent brush encroachment in these areas. Native brush would be protected and areas restored by re-planting with native vegetation. Invasive species control will occur in all affected habitats, which may include combinations of herbicide, prescribed fire, and mechanical treatment.

Alternative C

By adopting Alternative C, there would be some negative impacts to the overall landscape in terms of more developed areas and greater human presence. Unlike Alternative B, habitat management efforts would not be a main focus; therefore, implementation of Alternative C would likely slow progress toward improving habitat and wildlife conditions. While the existing management would have no negative effects on biological resources, a lack of publicly accepted goals and objectives (as in Alternative A) would make it difficult for Refuge managers to implement resource priorities and justify annual budget requests.

Expanded development of trails and associated infrastructure such as roads and visitor parking areas could lead to minor short-term negative impacts on a small amount of habitat.

Impacts on Wildlife

Alternative A

One of the primary purposes of the Refuge is to provide habitat for wintering waterfowl and other migratory birds; therefore, all habitat and water management activities are implemented for the benefit of wildlife on the Refuge. Migratory birds will continue to receive benefit from the No Action Alternative. Migratory bird populations that use the Refuge are not expected to undergo any significant changes related to this alternative. The direct impacts of any habitat altering activity (e.g., prescribed fire, invasive species control, manipulating wetland water levels, or brush restoration) may include displacement of individual animals

and/or habitat loss; however these impacts are expected to be short-term and localized and should not adversely affect native wildlife populations overall. Long-term impacts (e.g., improved habitat quality or more available habitat) are expected to be beneficial. Disturbance to wildlife at some level is an unavoidable consequence of any public use program, regardless of the activity involved. However, the current level of impact from recreational activities (public use) on the Refuge is considered minimal.

Alternative B

Management on the South Padre Island Unit would center around protection activities such as monitoring and boundary posting to help prevent significant disturbance by people, vehicles, and pets. This is particularly true during the summer nesting season for sea turtles such as the Kemp's ridley, and for Wilson's and snowy plovers, as these birds utilize the South Padre Island Unit's mudflats, beaches, and shoreline areas extensively. Implementation of the objectives and strategies affecting the Bahia Grande Unit would open this unit up to carefully managed priority uses of the Refuge System.

Additional development proposed includes the construction of a wildlife drive and over six miles of hike-and-bike trails. The increase in traffic and human presence is expected to have some negative impacts, such as disturbance and changes in wildlife use patterns, but is not expected to result in significant direct or cumulative impacts that would be incompatible with Refuge purposes. Increased public use would likely lead to more littering, noise, and vehicle traffic. When site development activities are proposed, each activity would be given the appropriate NEPA consideration during pre-construction planning. At that time, any mitigation, if necessary, would be incorporated into the specific project to reduce the level of environmental impacts.

Expanding current levels and/or establishing new public uses will each be reviewed for compatibility with Refuge purposes and the Refuge System mission. The Refuge will also address the cumulative impacts of such uses as hunting and fishing in CCP-associated step-down plans. Hunting, a popular recreational activity on the Refuge, also provides important management benefits, which are geared to positively impact wildlife and their habitats. For example, it is desirable to control exotic species such as feral hogs and nilgai antelope by hunting to reduce or eliminate the damage they impose on fragile native habitats and to prevent these species from competing with native wildlife for food and space. Nonetheless, such public uses (e.g., hunting, fishing) will be carefully managed to ensure that these activities do not adversely impact wildlife populations or conflict with the purposes for which the Refuge was created.

Overall, implementing the CCP would have no known, long-term negative consequences to the Refuge's resources and would produce positive benefits in most key environmental areas. Efforts would be directed toward improving and protecting habitats (e.g., habitat restoration, wetland creation, and water level manipulation) for migratory birds, wintering waterfowl, federally-listed species, and resident fish and wildlife that currently occur or historically occurred on the Refuge.

Alternative C

Increased public use may lead to more littering, noise, and vehicle traffic, which could directly impact wildlife through disturbance, displacement, and potential mortality (road kill). Expanding certain uses such as hunting in additional areas may directly and cumulatively affect migratory birds and other wildlife uses of the Refuge. However, when site development activities are proposed, each activity would be given the appropriate NEPA consideration during pre-construction planning. At that time, any mitigation, if necessary, would be incorporated into the specific project to reduce the level of environmental impacts. Nonetheless, expanding public uses and associated infrastructure would be expected to increase the level of potential disturbance to wildlife and fragmentation of habitat. It would also redirect resources from wildlife and habitat management and restoration activities to developing, managing, and maintaining the expanded visitor services facilities, infrastructures, and programs.

Impacts on Threatened and Endangered Species

Alternative A

Little or no impacts to listed species are anticipated under current management scenarios. Existing protocols for the public use, including hunting, fire management, and wildlife management, has been reviewed, and these activities were determined not likely to adversely affect listed species or their habitats. However, the status quo could slow progress towards implementing important recovery activities and habitat protections. This may hamper important educational and partnership opportunities to further increase support for the conservation of threatened and endangered species.

Alternative B

The Service would actively pursue opportunities to strengthen or improve partnerships and cooperative efforts with other agencies and individuals to improve conservation efforts for the recovery of endangered species. An example is the development of Safe Harbor Agreements for endangered species occurring on private lands. Also under this alternative, systematic biological surveys and inventories of the Refuge's resources would update endangered and threatened species use of the Refuge. Management actions could then be more efficiently implemented to increase enhancement and protection of these Federal trust species and their specific habitats. The CCP proposes improvements to listed species habitats such as establishing and maintaining wildlife corridors between Refuge tracts to connect endangered ocelot populations with each other. Prescribed fires will be used to manage for open grasslands, benefitting such species as the aplomado falcon. Actually, many of the strategies in the CCP are intended to implement specific recovery actions for listed species. They include working with partners, population status monitoring, and "hands on" species and habitat management.

Management concern and requirements under the ESA will remain the same as in Alternative A; however, with greater emphasis on improving a habitat quality using an ecosystem approach to management, there a greater potential for long-term benefits to threatened and endangered species.

Alternative C

Under Alternative C, listed species (ocelot, jaguarundi, aplomado falcon, piping plover, brown pelican, Kemp's ridley sea turtle, and other listed sea turtles) would still be provided protection, as in Alternatives A and B. However, proposed expansions of the hunting program and the construction of new trails and roads may adversely affect federally-listed species and may rise to the level of incompatibility with Refuge purposes. The protection of federally-listed species is a primary concern regardless of the alternative. In general, any expanded public use activities and new trails or roads proposed under Alternative C (just as with the other alternatives) will have to be carefully reviewed for potential impacts to federally-listed species. However, optimizing public uses is likely to result in cumulative habitat degradation and wildlife disturbance, which could adversely affect listed species.

Impacts on Aesthetic and Visual Resources

Alternative A

The No Action Alternative would not affect the existing aesthetic and visual resources on and near the Refuge.

Alternative B

Under this alternative, some viewscapes would be altered by the construction of visitor services facilities such as interpretive panels, trails, parking areas, pull-outs, or other visitor facilities. These facilities would be designed and located for minimal visual intrusion and attractive appearance to the extent possible. Habitat improvement, in general, would gradually but favorably alter views through changes in vegetational cover or assemblages.

Alternative C

Under this alternative, some viewscapes would be permanently altered by the construction of new trails, roads, and parking areas. These facilities would be designed and located for minimal visual intrusion and attractive appearance to the extent possible. However, increased developments and high levels of public use would have some negative affect on aesthetics and, over time, would alter or reduce quality habitats and views through changes in vegetational cover or assemblages. This would be caused by more traffic and more people into more areas of the Refuge, which increases vegetation trampling and straying into more areas. Other factors that can negatively affect aesthetic and visual resources associated with high levels of public use include littering, wildlife disturbance, and vandalism.

Impacts on Cultural and Historical Resources

Alternative A

This alternative would have no known impact on archaeological and historical resources.

Alternative B

Impacts on cultural and historic resources would be evaluated at the time of construction of public use facilities, infrastructure, or other earthmoving activities. There may be archaeological sites unknown to the Refuge. Additional surveys for cultural or archaeological resources would be performed per Service policy.

Alternative C

Impacts on cultural and historic resources would be evaluated at the time of construction of public use facilities, infrastructure, or other earthmoving activities. Known World War II gunnery range structures in the Laguna Atascosa Unit and the cypress pilings at Bahia Grande would be evaluated and preserved as required. There may be archaeological sites unknown to the Refuge that are discovered in the future. Additional surveys for cultural or archaeological resources would be performed.

Impacts on Socioeconomic Resources

Alternative A

The Refuge's contribution to the local economy includes the local benefits of attracting approximately 350,000 visitors annually. For example, in 2002, non-residents spent almost $2.4 million related to their visits to Laguna Atascosa NWR, which resulted in $2.2 million in new economic activity and generated 46 new jobs and $873,400 in payroll (Caudill and Henderson 2002). Additionally, there is the direct expenditure of Refuge resources such as salaries to local employees and the purchase of equipment, services, and supplies from local vendors. For example, Refuge spending in fiscal year 2002 was $844,500; the net economic value visitors derived from their use of the Refuge was $2.7 million; and almost $6.3 million in benefits was derived from maintaining public use of this Refuge (Caudill and Henderson 2002). In the past five years, annual Refuge budget expenditures averaged $972,800, much of which makes its way into the local economy. Refuge Revenue Sharing Act payments from the Department of the Interior are designed to offset the burden that counties feel when Refuge properties are removed from the tax rolls. Laguna Atascosa NWR's tax payments to Cameron and Willacy counties from 2003 through 2005 averaged $87,273 and $16,330 respectively (Source: U.S. Fish and Wildlife Service Realty Division).

No significant change in the local economy or tourist visitation over current levels would be expected as a result of implementing the No Action alternative. Essentially, the economic and social condition of the area would remain the same. The presence and operation of the Refuge provides economic benefits to the surrounding communities within a 30-mile radius in several ways. The Refuge attracts local, national, and some international visitors; and by attracting visitors to the area, the Refuge generates revenue for the local economy. The majority of the Refuge's annual budget is recycled in the local economy through the Refuge staff, purchases with local stores for supplies, equipment repair and upkeep, and contracts for local labor. The local economy would also benefit from Refuge users that provide a vital infusion and recirculation of money into local businesses (e.g., local bait shops, sporting goods outlets, grocery stores, restaurants, hotels, and gas stations). Alternative A would have a general positive impact on the socioeconomic well-being of the local community. No activities proposed in this alternative would have a disproportionate negative impact on low-income or minority populations.

Under this alternative, current programs and facilities would continue to bring visitors to the area and would be expected to continue to generate additional revenues within the community. The Refuge provides full-time employment for 14 individuals who live in the local area and some seasonal jobs. Under this alternative, current management programs would continue to be implemented and no change in Refuge staffing would be required. Alternative A would thus have no net impact on local employment conditions.

Alternative B

The economic benefits would likely improve the local economy through the expansion of programs, staff, budget, and a resultant increase in Refuge visitation and participation in Refuge programs. The potential for increased tourism in the area would thus generate additional revenue for the local economy. No activities proposed in this alternative would have a disproportionate negative impact on low-income or minority populations. In addition, short- and long-term benefits to employment would occur. Short-term benefits include employment of contractors to construct improvements to structures and facilities associated with the development of the CCP. Long-term employment benefits would occur through the hiring of additional staff members.

Alternative C

The economic benefits under this alternative would be similar to Alternative B in that implementation would likely improve the local economy through an expansion of public uses like hunting, fishing, and wildlife observation and/or through a resultant increase in Refuge visitation. The anticipated increases would thus generate additional revenue for the local economy. No activities proposed in this alternative would have a disproportionate negative impact on low-income or minority populations. Under Alternative C, short-term benefits to employment may occur. Short-term benefits would include local employment of contractors to construct new trails and roads and make related improvements. Long-term benefits would include the hiring of four additional staff (one Outdoor Recreation Planner and three Park Rangers) for optimizing public uses.

Impacts on Public Use

Alternative A

Although visitation is expected to increase in the future, especially at Bahia Grande and South Padre Island, public use opportunities would essentially not change. The Refuge would not specifically improve or expand recreational activities such as hunting, fishing, and wildlife observation and photography above current levels. This would include the likelihood that public use activities or a public use program would not be established at the recently acquired Bahia Grande tract or on any other lands that may be subsequently acquired by the Service. There are currently no public use facilities at Bahia Grande or access to it except for a makeshift fishing area along Highway 48 and San Martín Lake. The only other fishing area on the Refuge with a boat ramp is at the Adolph Thomae Jr. County Park. Public use facilities would remain essentially the same, except for necessary maintenance improvements. However, any increases in current or new public uses would occur opportunistically. Additionally, upgrades or new facilities would occur under current budgeting and planning scenarios, despite expected increases in visitation to the Refuge. Public uses would be limited to current levels.

Alternative B

Based on national trends of increased public use of wildlife refuges, the proposed improvements to visitor services and facilities under Alternative B would encourage more visitation and public use opportunities such as hunting, wildlife observation, and environmental education and interpretation. Therefore, a significant positive impact to public

use is anticipated, as the implementation of this alternative is aimed at meeting this increased demand while remaining compatible with Refuge purposes.

Alternative C

The Refuge would maximize opportunities for recreational activities, particularly hunting, fishing, and the addition of new roads/trails for wildlife observation. Several bay access points, an additional designated fishing area, trails, and parking areas would be constructed on the Laguna Atascosa Unit. Bahia Grande Unit would be developed with at least one wildlife auto tour, seven hike-and-bike trails, a visitor contact station, and associated parking areas. Hunting would be significantly expanded, particularly at Bahia Grande, for white-tailed deer, feral hogs, nilgai antelope, waterfowl, doves, and quail during the appropriate seasons. At least two designated fishing areas would be developed. Existing facilities would probably not be upgraded, and the current headquarters facilities would not be improved or expanded to accommodate the anticipated increase in visitors.

Table 2: Effects Summary of Each Alternative

Summary of Effects by Alternative	Alternative A (No Action)	Alternative B (Implement CCP)	Alternative C (Optimize Public Uses)
Impacts on Air Quality	Short-term minor impacts	Short-term minor impacts	Some overall degradation likely to occur
Impacts on Water Quality	None	Improvements to the abundance and quality of freshwater and tidal inflows	None
Impacts on Soils	None	None	None
Impacts on Habitat	Minor short-term direct impacts; beneficial long-term impact; overall, could slow progress on important habitat management activities	Positive benefits anticipated overall; negligible impacts from greater disturbance	Adverse impacts expected over time; cumulative impacts likely
Impacts on Wildlife	No direct impacts; could slow progress on species protection and enhancement	Geared towards species protection and enhancement	May increase disturbance and remove some habitat for wildlife
Impacts on Threatened and Endangered (T/E) Species	No direct impacts; could slow progress on T/E protection and recovery	Long-term positive benefits; greater T/E species protection and awareness	Likely to increase cumulative adverse impacts to T/E species
Impacts on Aesthetic and Visual Resources	None	Slight impacts	Impacts from developments and high levels of public uses
Impacts on Cultural and Historic Resources	None	Not likely	Not likely
Impacts on Socioeconomic Resources	None	Positive benefits, long and short-term	Positive benefits, long and short-term
Impacts on Public Use	Programs remain at current levels and may not meet increasing demand	Significant improvements and expansion to meet increased demand	Maximized improvements and expansion for optimal public use

5. Cumulative Impacts and Mitigation

This section discusses the cumulative effects for all alternatives and mitigation measures. In addition, it provides information regarding consultation and coordination that has occurred with other Federal and State agencies, interested stakeholders, and the public.

5.1 Cumulative Impacts

A cumulative impact is defined as an impact on the natural and human environment that results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-federal) or person undertakes such other actions (40 CFR, Part 1508.7).

Cumulative impacts can result from individually minor but collectively significant actions taking place over time. Implementing Alternative B would reduce the potential for cumulative impacts because of the integrative approach to managing programs. Management actions would be coordinated into the overall management scenario for the Refuge and would be closely monitored. Ecological and biological integrity would be at the forefront of management actions. This would be a change from the issue-by-issue problem solving and separate approach inherent in the No Action Alternative (A). Site-specific activities associated with new construction or enhancement of visitor facilities would be evaluated for NEPA compliance under Alternatives B and C. At that time, any required mitigation activities would be designed into the specific project to reduce the level of unavoidable environmental impacts. Nothing in Alternative A would contribute to either minor or significant cumulative environmental impacts. Alternatives B and C may contribute to some minor cumulative habitat impacts such as new facilities, roads, trails, and wildlife disturbance.

Other cumulative impacts surrounding the Refuge are associated with a rapid increase in development and human populations. The Lower Rio Grande Valley of Texas (LRGV) is characterized by agricultural and urban development, scattered small farming communities, and the seasonal influx of summer visitors and winter residents (i.e., Winter Texans). There are three major metropolitan areas in the Valley. The City of Brownsville, with a population of 139,722 (2000 U.S. Census Bureau), is located about 30 miles south of the Refuge headquarters, along the Rio Grande. Harlingen, located about 25 miles west of the Refuge, has a population of 57,564 (Source: 2000 Census). The third major metropolitan area is McAllen, located about 58 miles west of the Refuge, with a population of 106,414 (2000 U.S. Census Bureau). Overall, the population of the LRGV, which is comprised of Cameron, Hidalgo, Starr, and Willacy counties, has grown from 701,888 in 1990 to 978,369 in 2000, a 39.4 percent increase (Sethi and Arriola 2002). Cameron County grew by 28.9 percent, and Willacy County grew by 13.4 percent during the same 10-year period (Sethi and Arriola 2002). In fact, the LRGV metropolitan area is one of the top 30 fastest growing regions in the nation (Sethi and Arriola 2002).

As a result, specific development activities that are reasonably foreseeable include the proposed construction of a second causeway to South Padre Island. This proposed location may impact the Coastal Corridor Unit of the Refuge by traversing it and, if the causeway is built, would facilitate development of the north side of South Padre Island. This may increase visitation and impacts to the tracts on the South Padre Island Unit. This causeway may also increase pressure to extend Park Road 100 north toward the Mansfield Cut, which would cut right through the South Padre Island tracts. Additional developments that may occur are additional roads, such as the "northwest corridor" that would link South Padre Island with U.S. Highway 77 and expansion of existing roads such as farm roads to highways that would

cross corridors and Refuge tracts. Other development near the Refuge could include unregulated subdivisions (colonias), or urban expansion may affect Refuge tracts by bringing in dogs and cats or by increasing the demand for water, resulting in wildlife habitat loss. The footprint of this development would also affect the aesthetics or the viewscapes that would detract from the natural beauty of the area.

Other impacts include the construction of a border fence along the Rio Grande just south of the Refuge. This fence may indirectly affect wildlife populations by preventing the migration or movement of sensitive wildlife that occur on the Refuge (e.g., ocelot and jaguarundi). West of the Refuge and just offshore are proposals to build wind farms to generate electricity. This may cause impacts to migratory birds and bats that move to and from the Refuge. An increase in the number of desalination plants to provide more water to the area would facilitate large scale development of the area surrounding the Refuge. The lack of freshwater is an issue along the arid south Texas coast due to agricultural and increasing municipal needs. The lack of freshwater may lead to the piping of the open-water canals currently in use. This would result in less water for wildlife and would tend to increase the value of the Refuge to wildlife even more. Intensified agricultural production in the LRGV may include the use of genetically modified crops. It is unknown what effect this may have on native wildlife and plants in the planning area.

There are plans to build a deepwater port by the Brownsville Navigation District that may affect the Bahia Grande Unit due to development of additional infrastructure such as a rail and truck lines and maintenance of the ship channel, which would require dredging and deposition of the spoil material. This is typically deposited on land or used to create spoil "islands." There are plans to expand the Brownsville Ship Channel from the current 200 feet to 400 feet. This may affect the hydrology of the area that may, in turn, affect the quality and quantity of water on the Bahia Grande Unit.

On the Bahia Grande and South Padre Island Units, the mineral rights are owned by private third parties. Therefore, the exploration and development of oil and gas may result in surface impacts from seismic testing to oil and gas infrastructure on these units.

5.2 Mitigation Measures

Mitigation is the last step in a planning process beginning first with avoidance. Nothing proposed in Alternative A would produce environmental impacts of any significance that would warrant mitigatory measures. For Alternatives B and C, the activities listed in the following text serve to reduce the risks of negative effects occurring.

- (Alternative B only) Updated resource baseline data would be gathered to form a current analytical base from which to judge future management impacts and effects.
- (Alternative B only) An extensive and ongoing monitoring program would be developed and implemented to judge management action effectiveness and provide alternative solutions that would lessen any short-term or long-term negative impacts on fish and wildlife resources and other environmental elements. This is particularly true for proposed hunting, fishing, and boating activities.
- The Refuge would closely regulate and propose actions to adequately address any potential impacts. For example, activities would be conducted during certain times of the year and in areas where breeding and nesting activities are not occurring or are at a minimum. Hunting and fishing would be limited to areas that provide a quality

outdoor experience but not to the level that causes a significant, measurable negative effect on resident and migratory wildlife.

- The Refuge would prohibit or restrict activities in areas where listed species occur or CCP activities that may adversely affect federally-listed species. The potential effects of the implementation of the CCP's objectives and strategies on federally-listed species have been reviewed per an Intra-Service Section 7 consultation (See Appendix G).

6. Consultation and Coordination

To begin the CCP/EA process, a comment period notification was published in the *Federal Register* on July 19, 2004 (69 FR 43010-11). This notice can be obtained by key word searching at the *Federal Register* site at: http://www.gpoaccess.gov/fr/index.html. Draft documents and other relevant information for public review will be available at the Refuge headquarters. Internal pre-planning meetings were held at the Refuge in February and June of 2004 to discuss concerns, issues, and opportunities for the future of the Refuge. Four "open house" style public meetings were held from February 28 through March 8, 2005, at Raymondville, Brownsville, Harlingen, and South Padre Island to solicit initial input and involvement from interested parties and stakeholders (Federal, State, and local agencies, groups, organizations, adjacent landowners, and the public) during the early stages of CCP/EA development. The State of Texas was also invited to participate in the planning process on April 12, 2004, and has provided input into the planning process. All comments received from interested parties and the public will be reviewed and considered throughout the CCP/EA process. These comments will be addressed in the final CCP.

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Wells, F.C., G.A. Jackson, and J. Rogers. 1988. Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Lower Rio Grande Valley and Laguna Atascosa National Wildlife Refuge, Texas, 1986-1987. U.S. Geological Survey, Water Resources Investigations Report 87-4277. 89 pp.

A. Refuge Biota

A.1 Birds of Laguna Atascosa NWR

** - species has nested on the Refuge*
† - exotic: introduced or escaped species
[TX-P] - identified in the Texas Comprehensive Wildlife Conservation Strategy as a priority species
[FS] - identified as a Service Migratory Bird Program focal species

SEASONS:

Sp - March-May

S - June-August

F - September-November

W - December-February

ABUNDANCE

a - abundant: sure to see

c - common: certain in proper habitat

u - uncommon: present, but may not be seen

o - occasional: seen a few times per season

r - rare: seen every 2 to 5 years

x - accidental: seen only once or twice

Loons	**Sp**	**S**	**F**	**W**
Red-throated Loon	-	-	x	x
Common Loon	r	x	r	o

Grebes	**Sp**	**S**	**F**	**W**
Least Grebe*	u	c	u	u
Pied-billed Grebe*	c	u	a	a
Horned Grebe	-	-	r	r
Red-necked Grebe	-	-	-	x
Eared Grebe	u	o	u	u
Western Grebe	o	-	o	o

Gannets	**Sp**	**S**	**F**	**W**
Northern Gannet	-	-	-	x

Pelicans	**Sp**	**S**	**F**	**W**
American White Pelican TX-P	u	o	c	c
Brown Pelican TX-P FS	r	r	r	r

Cormorants	**Sp**	**S**	**F**	**W**
Double-crested Cormorant FS	u	u	c	a
Olivaceous Cormorant	u	u	o	o

Anhingas	**Sp**	**S**	**F**	**W**
Anhinga	o	o	o	o

Frigatebirds	**Sp**	**S**	**F**	**W**
Magnificent Frigatebird	r	r	r	-

Bitterns and Herons	**Sp**	**S**	**F**	**W**
American Bittern	o	o	o	u
Least Bittern* TX-P	o	u	o	r
Great Blue Heron*	c	u	c	c
Great Blue Heron (Great White)	-	-	-	x
Great Egret	c	u	c	c
Snowy Egret TX-P	c	c	c	c
Little Blue Heron* TX-P	u	u	c	u
Tricolored Heron* TX-P	c	c	c	c
Reddish Egret* TX-P FS	c	u	c	c
Cattle Egret	u	u	c	u
Green Heron*	u	u	o	o
Black-crowned Night-Heron*	u	u	u	u
Yellow-crowned Night-Heron* TX-P	u	u	u	o

Ibises and Spoonbills	**Sp**	**S**	**F**	**W**
White Ibis	c	u	c	o
White-faced Ibis [TX-P]	c	o	c	u
Roseate Spoonbill [TX-P]	u	o	u	o

Storks	**Sp**	**S**	**F**	**W**
Wood Stork	r	r	r	-

Flamingos	**Sp**	**S**	**F**	**W**
American Flamingo	-	x	-	-

Swans, Geese and Ducks	**Sp**	**S**	**F**	**W**
Fulvous Whistling Duck	o	r	r	o
Black-bellied Whistling Duck*	c	a	u	o
Greater White-fronted Goose	o	-	u	u
Snow Goose	u	-	c	c
Ross' Goose	-	-	r	r
Brant	-	-	-	x
Barnacle Goose	-	-	-	x
Canada Goose [FS]	u	-	c	c
Wood Duck	-	-	r	r
Green-winged Teal	u	r	c	c
American Black Duck	-	-	x	x
Mottled duck* [TX-P FS]	c	c	c	c
Mallard [FS]	r	-	r	o
White-cheeked Pintail	x	-	x	x
Northern Pintail [TX-P FS]	u	r	c	a
Blue-winged Teal*	u	u	c	c
Cinnamon Teal	u	-	o	u
Northern Shoveler	c	o	c	c
Gadwall	u	r	c	c
Eurasian Wigeon	-	-	-	x
American Wigeon [FS]	u	r	c	a

Canvasback [TX-P]	u	-	u	c
Redhead [TX-P]	u	r	c	c
Ring-necked Duck	o	-	o	u
Greater Scaup	-	-	r	r
Lesser Scaup	u	-	o	u
Surf Scoter	-	-	-	x
Common Goldeneye	-	-	r	r
Bufflehead	u	-	u	u
Hooded Merganser	-	-	o	u
Red-breasted Merganser	o	-	u	u
Ruddy Duck	c	r	a	a
Masked Duck*	x	x	x	x

American Vultures	**Sp**	**S**	**F**	**W**
Black Vulture	u	u	u	u
Turkey Vulture*	c	c	c	c

Kites, Eagles, and Hawks	**Sp**	**S**	**F**	**W**
Osprey	u	o	u	u
Swallow-tailed Kite	r	-	r	-
White-tailed Kite* [TX-P]	u	u	u	u
Mississippi Kite	o	-	-	-
Bald Eagle	-	-	-	r
Northern Harrier (Marsh Hawk) [TX-P]	c	r	c	c
Sharp-shinned Hawk	u	-	u	u
Cooper's Hawk	u	-	u	u
Common Black-Hawk	-	-	x	x
Harris' Hawk* [TX-P]	u	u	u	u
Red-shouldered Hawk	o	-	o	o
Broad-winged Hawk	u	-	o	-
Swainson's Hawk	o	-	o	r
White-tailed Hawk* [TX-P]	u	u	u	u
Zone-tailed Hawk	x	x	x	-

Red-tailed Hawk	u	-	u	u
Ferruginous Hawk	r	-	r	r
Rough-legged Hawk	-	-	-	x
Golden Eagle	-	-	x	x

Caracaras and Falcons	**Sp**	**S**	**F**	**W**
Crested Caracara*	u	u	o	o
American Kestrel TX-P	c	-	a	a
Merlin	o	-	o	u
Aplomado Falcon TX-P	r	r	r	r
Peregrine Falcon FS (Arctic-TX-P)	-	-	-	r
Prairie Falcon	-	-	r	r

Chachalacas	**Sp**	**S**	**F**	**W**
Plain Chachalaca*	c	c	u	u

Turkeys, Quail, and Pheasants	**Sp**	**S**	**F**	**W**
Chukar†	o	o	o	o
Ring-necked Pheasant†	o	o	o	o
Wild Turkey*	r	r	r	r
Northern Bobwhite* TX-P	c	c	c	c

Rails, Gallinules, and Coots	**Sp**	**S**	**F**	**W**
Clapper Rail FS	-	-	o	o
King Rail* TX-P FS	u	u	u	u
Virginia Rail	u	-	-	u
Sora*	u	r	u	u
Purple Gallinule* TX-P	o	o	r	-
Common Moorhen*	u	u	u	u
American Coot*	a	u	a	a

Cranes	**Sp**	**S**	**F**	**W**
Sandhill Crane FS	o	-	c	c

Whooping Crane	-	-	x	-

Plovers	**Sp**	**S**	**F**	**W**
Black-bellied Plover	a	u	a	c
American Golden Plover (Lesser Gol-Pl.)	u	-	r	r
Snowy Plover* TX-PFS	u	-	u	u
Wilson's Plover* TX-PFS	a	a	c	r
Semipalmated Plover	u	-	u	u
Piping Plover TX-PFS	u	-	u	u
Killdeer*	c	c	c	c
Mountain Plover	r	-	o	r

Oystercatchers	**Sp**	**S**	**F**	**W**
American Oystercatcher	-	r	r	r

Stilts and Avocets	**Sp**	**S**	**F**	**W**
Black-necked Stilt* TX-P	u	c	c	u
American Avocet* TX-P	c	c	c	u

Jacanas	**Sp**	**S**	**F**	**W**
Northern Jacana	x	x	-	x

Sandpipers and Phalaropes	**Sp**	**S**	**F**	**W**
Greater Yellowlegs TX-P	a	u	a	c
Lesser Yellowlegs TX-P	a	u	a	c
Solitary Sandpiper	u	-	u	r
Willet*	a	a	a	a
Spotted Sandpiper	u	u	u	u
Upland Sandpiper	u	-	u	-
Whimbrel	u	-	u	o
Long-billed Curlew TX-PFS	c	u	a	c
Hudsonian Godwit	o	-	-	-
Marbled Godwit	u	o	u	u

Ruddy Turnstone [TX-P]	u	o	u	u
Red Knot [TX-P]	o	o	o	-
Sanderling	u	o	u	u
Semipalmated Sandpiper	a	r	a	o
Western Sandpiper [TX-P]	a	o	a	a
Least Sandpiper	c	u	c	c
White-rumped Sandpiper	o	-	o	o
Baird's Sandpiper	o	-	o	-
Pectoral Sandpiper	u	-	u	o
Dunlin	a	o	a	c
Curlew Sandpiper	-	-	-	x
Stilt Sandpiper [TX-P]	u	o	c	o
Buff-breasted Sandpiper	u	-	u	-
Short-billed Dowitcher	-	-	o	-
Long-billed Dowitcher	a	o	a	c
Common Snipe	u	-	u	u
American Woodcock	-	-	-	x
Wilson's Phalarope	u	-	u	-
Red-necked Phalarope	r	-	r	-
Red Phalarope	-	-	r	-

Gulls, Terns, and Skimmers	**Sp**	**S**	**F**	**W**
Laughing Gull*	a	a	a	c
Franklin's Gull	u	-	u	-
Bonaparte's Gull	-	o	o	r
Ring-billed Gull	c	u	c	a
Herring Gull	u	o	u	u
Great Black-backed Gull	-	-	-	x
Gull-billed Tern* [TX-PFS]	c	c	c	u
Caspian Tern* [FS]	c	c	c	u
Royal Tern*	o	o	o	o
Sandwich Tern	o	o	o	o
Common Tern	u	-	u	r

Forster's Tern* TX-P	c	c	c	c
Least Tern*	c	c	c	o
Sooty Tern	-	x	-	-
Black Tern	c	u	c	r
Black Skimmer* TX-P	c	c	u	u

Pigeons and Doves	**Sp**	**S**	**F**	**W**
Rock Dove†	-	-	r	r
Red-billed Pigeon	-	r	r	r
Band-tailed Pigeon	-	-	-	x
White-winged Dove*	o	o	o	r
Mourning Dove* TX-P	a	a	a	a
Inca Dove*	o	o	o	o
Common Ground-Dove*	c	c	c	c
Ruddy Ground-Dove	x	-	-	x
White-tipped dove*	o	u	u	o

Parakeets and Parrots	**Sp**	**S**	**F**	**W**
Green Parakeet	-	-	x	x
Red-crowned Parrot	x	-	-	-
Yellow-headed Parrot	-	x	-	-

Cuckoos, Roadrunners, and Anis	**Sp**	**S**	**F**	**W**
Black-billed Cuckoo	o	-	-	-
Yellow-billed Cuckoo* TX-P FS	c	c	o	-
Greater Roadrunner*	c	c	c	u
Groove-billed Ani*	u	c	c	o

Barn owls	**Sp**	**S**	**F**	**W**
Barn Owl*	u	u	u	u

Typical Owls	**Sp**	**S**	**F**	**W**
Eastern Screech-Owl*	u	u	u	u

Great Horned Owl*	u	u	u	u
Burrowing Owl TX-P	-	-	o	o
Short-eared Owl FS	u	-	u	u
Night Jars	**Sp**	**S**	**F**	**W**
Lesser Nighthawk*	u	u	u	-
Common Nighthawk* TX-P	c	a	a	-
Pauraque*	c	c	c	u
Chuck-will's-widow	o	-	u	-
Whip-poor-will	r	-	-	-
Swifts	**Sp**	**S**	**F**	**W**
Chimney Swift TX-P	c	-	-	o
Hummingbirds	**Sp**	**S**	**F**	**W**
Buff-bellied Hummingbird TX-P	r	r	r	-
Ruby-throated Hummingbird	u	-	-	u
Black-chinned Hummingbird	u	-	-	-
Rufous Hummingbird	-	-	r	r
Kingfishers	**Sp**	**S**	**F**	**W**
Ringed Kingfisher	-	-	-	r
Belted Kingfisher	u	-	c	c
Green Kingfisher	-	r	-	-
Woodpeckers	**Sp**	**S**	**F**	**W**
Red-headed Woodpecker	x	-	-	-
Golden-fronted Woodpecker* TX-P	a	a	a	a
Yellow-bellied Sapsucker FS	o	-	u	u
Ladder-backed Woodpecker* TX-P	c	c	c	c
Northern Flicker (Common Flicker)	-	-	o	o

Tyrant Flycatchers	**Sp**	**S**	**F**	**W**
Northern beardless-Tyrannulet	r	r	r	r
Olive-sided Flycatcher	u	-	u	-
Western Wood-Pewee	u	-	u	-
Eastern Wood-Pewee TX-P	c	-	c	-
Yellow-bellied Flycatcher	r	-	-	-
Acadian Flycatcher	o	-	o	-
Least Flycatcher	u	-	u	-
Eastern Phoebe	c	u	c	c
Say's Phoebe	r	-	r	r
Vermilion Flycatcher*	u	-	u	o
Ash-throated Flycatcher	-	-	-	r
Great Crested Flycatcher	u	-	u	o
Brown-crested flycatcher*	c	c	-	-
Great Kiskadee*	u	c	u	u
Couch's Kingbird*	u	u	u	u
Western Kingbird	u	-	-	-
Eastern Kingbird* TX-P	c	-	c	-
Scissor-tailed Flycatcher* TX-P	a	u	c	r

Larks	**Sp**	**S**	**F**	**W**
Horned Lark* TX-P	c	c	c	c

Swallows	**Sp**	**S**	**F**	**W**
Purple Martin	u	-	u	-
Tree Swallow	c	-	c	r
Northern Rough-winged Swallow	a	-	c	-
Bank Swallow	c	o	c	-
Cliff Swallow	u	-	o	-
Barn Swallow	c	o	c	-

Jays, Crows, and Ravens	**Sp**	**S**	**F**	**W**
Blue Jay	-	-	r	r

Green Jay*	u	u	u	u
Mexican Crow	r	-	r	r
Chihuahuan Raven*	u	u	o	o
Titmice	**Sp**	**S**	**F**	**W**
Tufted Titmouse*	u	o	u	u
Verdins	**Sp**	**S**	**F**	**W**
Verdin*	u	u	u	u
Wrens	**Sp**	**S**	**F**	**W**
Cactus Wren*	c	c	c	c
Rock Wren	-	-	-	r
Canyon Wren	-	-	x	-
Carolina Wren*	o	o	o	o
Bewick's Wren* TX-P	u	u	u	u
House Wren	r	-	c	c
Sedge Wren	u	-	u	u
Marsh Wren	u	-	u	u
Kinglets and Gnatcatchers	**Sp**	**S**	**F**	**W**
Golden-crowned Kinglet	-	-	-	o
Ruby-crowned Kinglet	u	-	c	c
Blue-gray Gnatcatcher	u	o	c	c
Thrushes	**Sp**	**S**	**F**	**W**
Eastern Bluebird	o	-	o	r
Mountain Bluebird	r	-	-	r
Veery	u	-	-	-
Gray-cheeked Thrush	u	-	-	-
Swainson's Thrush	u	-	-	-
Hermit Thrush	u	-	u	u
Wood Thrush FS	u	-	-	-

Clay-colored Thrush	-	-	-	x
American Robin	u	-	u	c
Mimics and Thrashers	**Sp**	**S**	**F**	**W**
Gray Catbird	c	-	c	-
Northern Mockingbird*	a	a	a	a
Sage Thrasher	o	-	o	o
Brown Thrasher	-	-	-	r
Long-billed Thrasher* TX-P	u	u	u	u
Curve-billed Thrasher* TX-P	c	c	c	c
Pipits	**Sp**	**S**	**F**	**W**
American Pipit (Water Pipit)	o	-	c	c
Sprague's Pipit	-	-	-	o
Waxwings	**Sp**	**S**	**F**	**W**
Cedar Waxwing	o	-	u	u
Silky-Flycatchers	**Sp**	**S**	**F**	**W**
Gray Silky-Flycatcher	-	-	x	-
Shrikes	**Sp**	**S**	**F**	**W**
Loggerhead Shrike TX-P FS	u	-	u	u
Starlings	**Sp**	**S**	**F**	**W**
European Starling†	-	-	r	r
Vireos	**Sp**	**S**	**F**	**W**
White-eyed Vireo*	u	u	u	u
Solitary Vireo	u	-	u	u
Yellow-throated Vireo	u	-	u	-
Warbling Vireo	u	-	u	-
Philadelphia Vireo	u	-	u	-
Red-eyed Vireo	u	-	o	-

Yellow-green Vireo	x	x	x	x
Wood-Warblers	**Sp**	**S**	**F**	**W**
Blue-winged Warbler	u	-	-	-
Golden-winged Warbler	r	-	-	-
Tennessee Warbler	c	-	u	-
Orange-crowned Warbler	c	-	c	c
Nashville Warbler	u	-	u	u
Virginia's Warbler	-	-	-	x
Northern Parula	u	-	o	-
Tropical Parula	-	x	-	x
Yellow Warbler	u	-	c	-
Chestnut-sided Warbler	c	-	u	-
Magnolia Warbler	u	-	o	-
Cape May Warbler	x	-	-	-
Yellow-rumped Warbler	c	-	c	c
Black-throated Gray Warbler	x	-	x	-
Hermit Warbler	-	x	-	-
Black-throated Green Warbler	u	-	u	o
Blackburnian Warbler	u	-	o	-
Yellow-throated Warbler	u	-	u	o
Palm Warbler	r	-	-	r
Bay-breasted Warbler	u	-	-	-
Blackpoll Warbler	r	-	-	-
Cerulean Warbler [FS]	o	-	-	-
Black-and-white Warbler	c	r	c	u
American Redstart	u	-	o	-
Prothonotary Warbler [FS]	o	-	-	-
Worm-eating Warbler	u	-	-	-
Swainson's Warbler	r	-	-	-
Ovenbird	r	-	r	-
Northern Waterthrush	u	-	o	-
Louisiana Waterthrush	u	-	o	r

Kentucky Warbler	o	-	o	-
Mourning Warbler	r	-	-	-
Common Yellowthroat*	c	u	c	u
Hooded Warbler	u	-	o	-
Wilson's Warbler	u	-	u	u
Canada Warbler	u	-	o	-
Red-faced Warbler	-	-	x	-
Yellow-breasted Chat*	u	-	o	-

Tanagers	**Sp**	**S**	**F**	**W**
Summer Tanager*	u	o	-	-
Scarlet Tanager	u	-	-	-
Western Tanager	r	-	-	r

Cardinals and Grosbeaks	**Sp**	**S**	**F**	**W**
Northern Cardinal*	c	c	c	c
Pyrrhuloxia	u	o	u	u
Rose-breasted Grosbeak	u	-	-	-
Black-headed Grosbeak	r	-	-	r
Blue Grosbeak*	c	o	u	-
Lazuli Bunting	r	-	-	-
Indigo Bunting	c	-	u	o
Varied Bunting*	u	o	-	-
Painted Bunting* TX-P FS	c	o	u	-
Dickcissel* TX-P	c	-	c	-

Sparrows	**Sp**	**S**	**F**	**W**
Olive Sparrow*	c	c	c	c
Green-tailed Towhee	-	-	o	o
Rufous-sided Towhee	-	-	-	r
White-collared Seedeater	r	r	r	r
Botteri's sparrow*	c	c	u	-
Cassin's Sparrow* TX-P	c	c	c	o

Chipping Sparrow	u	-	u	-
Clay-colored Sparrow	u	-	u	u
Field Sparrow	o	-	u	u
Vesper Sparrow	u	-	u	u
Lark Sparrow [TX-P]	c	u	c	c
Black-throated Sparrow*	o	o	o	o
Lark Bunting	o	-	o	o
Savannah Sparrow	a	-	a	a
Baird's Sparrow	-	-	-	r
Grasshopper Sparrow [FS]	u	-	o	o
Le Conte's Sparrow	-	-	-	u
Sharp-tailed Sparrow	-	-	-	r
Seaside Sparrow [FS]	-	-	-	r
Fox Sparrow	-	-	-	x
Song Sparrow	o	-	o	o
Lincoln's Sparrow	u	-	c	c
Swamp Sparrow	u	-	o	o
White-throated Sparrow	o	-	-	o
Golden-crowned Sparrow	-	-	-	x
White-crowned Sparrow	u	-	u	o
Harris' Sparrow	-	-	-	x
Dark-eyed Junco	-	-	-	r

Blackbirds and Orioles	**Sp**	**S**	**F**	**W**
Bobolink	x	-	-	-
Red-winged Blackbird*	a	a	a	a
Eastern Meadowlark* [TX-PFS]	a	a	a	a
Western Meadowlark	o	-	-	u
Yellow-headed Blackbird	o	-	o	r
Brewer's Blackbird	c	-	c	c
Great-tailed Grackle*	a	a	a	a
Bronzed cowbird*	c	a	u	o
Brown-headed Cowbird*	c	c	c	c

Orchard Oriole [TX-P]	c	o	o	-
Hooded Oriole	r	r	-	r
Altamira Oriole	r	-	-	r
Audubon's Oriole* [TX-P FS]	r	r	r	r
Baltimore Oriole	c	-	u	-

Finches	**Sp**	**S**	**F**	**W**
Pine Siskin	-	-	-	u
Lesser Goldfinch	r	-	-	r
American Goldfinch	u	-	u	u

Old World Sparrows	**Sp**	**S**	**F**	**W**
House Sparrow*†	c	c	c	c

Hypothetical birds, a status given to birds that have been recorded in Cameron County but not on the Refuge, follow:

Scarlet Ibis	Red-bellied Woodpecker
Tundra Swan	Rose-throated Becard
Oldsquaw	Brown Creeper
Black Scoter	Black-tailed Gnatcatcher
Common Merganser	Western Bluebird
Hook-billed Kite	Bell's Vireo
Gray Hawk	Black-capped Vireo
Roadside Hawk	Black-throated Blue Warbler
Scaled Quail	Golden-cheeked Warbler
Limpkin	Pine Warbler
Double-striped Thick-knee	Connecticut Warbler
Eskimo Curlew	Gray-crowned Yellowthroat
Ruff/Reeve	Golden-crowned Warbler
California Gull	Hepatic Tanager
Roseate Tern	Brewer's Sparrow
Ferruginous Pygmy-Owl	McCown's Longspur
Elf Owl	Chestnut-collared Longspur
Barred Owl	Boat-tailed Grackle

Long-eared Owl
Common Grackle
Elegant Trogon

Source:

U.S. Fish and Wildlife Service. 1987. Birds of Laguna Atascosa National Wildlife Refuge, Texas. U.S. Fish and Wildlife Service. Unpaginated. *(Version: May 22, 1998).*

A.2 Amphibians and Reptiles

Salamanders and relatives

Rio Grande Lesser Siren [TX-P]	*Siren intermedia texana*
Black-spotted Newt [TX-P]	*Notophthalmus meridionalis*

Frogs and Toads

Great Plains Narrow-mouth Toad	*Gastrophryne olivacea*
Sheep Frog [TX-P]	*Hypopachus variolosus*
Rio Grande Chirping Frog	*Syrrhophus cystignathoides campi*
Couch's Spadefoot Toad	*Scaphiopus couchi*
Gulf Coast Toad	*Bufo valliceps*
Texas Toad	*Bufo speciosus*
Spotted Chorus Frog	*Pseudacris clarki*
Rio Grande Leopard Frog	*Rana berlandieri*

Crocodiles

American Alligator [TX-P]	*Alligator mississippiensis*

Turtles

Red-eared Slider	*Trachemys scripta elegans*
Texas Spiny Softshell	*Trionyx spiniferus emoryi*
Yellow Mud Turtle	*Kinosternon f. flavescens*
Texas Tortoise [TX-P]	*Gopherus berlandieri*

Sea Turtles

Kemp's Ridley Sea Turtle [TX-P]	*Lepidochelys kempii*
Loggerhead Sea Turtle [TX-P]	*Caretta caretta*

Green Sea Turtle [TX-P]	*Chelonia mydas*
Hawksbill Sea Turtle [TX-P]	*Eretmochelys imbricata*

Lizards

Mediterranean Gecko†	*Hemidactylus turcius*
Four-lined Skink	*Eumeces tegragrammaus*
Texas Spotted Whiptail	*Cnemidophorus g. gularis*
Green Anole	*Anolis carolinensis*
Rosebelly Lizard	*Scleoporus variabilis marmoratus*
Texas Horned Lizard [TX-P]	*Phrynosoma cornutum*
Texas Spiny Lizard	*Sceloporus olivaceus*

[TX-P] - identified in the Texas Comprehensive Wildlife Conservation Strategy as a priority species
† - Introduced

Snakes

Texas Blind Snake	*Leptotyphlops d. dulcis*
Black Striped Snake	*Coniophanes i. Imperialis*
Bull Snake	*Pituophus melanoleucus sayi*
Eastern Checkered Garter Snake	*Thamnophis m. marcianus*
Great Plains Rat Snake	*Elahpe guttata emoryi*
Gulf Coast Ribbon Snake	*Thamnophis proximus orarius*
Mexican Hooknose Snake	*Ficimia streckeri*
Mexican Milk Snake	*Lampropeltis trianulum annulata*
Mexican Racer	*Coluber constrictor*
Plains Blackhead Snake	*Tantilla nigriceps nigriceps*
Ruthven's Whipsnake	*Masticophus taeniatus ruthveni*
Texas Brown Snake	*Storeria dekayi texana*
Texas Indigo Snake [TX-P]	*Drymarchon corais erebennus*
Texas Patchnose Snake	*Salvadora grahamiae lineata*
Diamondback Water Snake	*Nerodia r. rhombifera*
Texas Coral Snake	*Micrurus fulvius tenere*
Western Diamondback Rattlesnake	*Crotalus atrox*

[TX-P]- identified in the Texas Comprehensive Wildlife Conservation Strategy as a priority species

A.3 Fish

		HABITAT*
Inland Silverside	*Menidia beryllina*	C
Warmouth	*Lepomis gulosus*	T
Mexican Tetra	*Astyanax mexicanus*	T
Gizzard Shad	*Dorosoma cepedianum*	C
Sheepshead Minnow	*Cyprinodon variegatus*	C, L, T
Gulf Killifish	*Fundulus grandis*	C
Striped Killifish	*Fundulus majalis*	C, L
Rainwater Killifish	*Lucania parva*	T
Code Goby	*Gobiosoma robustum*	L
Alligator Gar	*Atractosteus spatula*	B, C, T
Spotted Gar	*Lepisosteus oculatus*	B, C, T
Striped Mullet	*Mugil cephalus*	L, C
Mosquitofish	*Gambusia affinis*	T
Amazon Molly	*Poecilia formosa*	T
Sailfin Molly	*Poecilia latipinna*	T, C
Spot	*Leiostomus xanthurus*	L
Channel Catfish	*Ictalurus punctatus*	T
Common Carp	*Cyprinus carpio*	T
Redfish	*Sciaenops ocellatus*	L
Black Drum	*Pogonias cromis*	L
Southern Flounder	*Paralichthys lethostigma*	L
Spotted Seatrout	*Cynoscion nebulosus*	L
Sand Seatrout	*Cynoscion arenarius*	L
Menhaden	*Brevoortia tyrannus*	L
Dusky Pipefish	*Syngnathus floridae*	L

*

L = Laguna Madre
C = Cayo Atascosa
T = freshwater ponds, tanks, resacas, or lakes
B = Bahia Grande

A.4 Mammals

Opossums	
Virginia Opossum	*Didelphis virginiana californica*
Shrews	
Least Shrew	*Cryptotis parva berlandieri*
Bats	
Cave Myotis	*Myotis velifer*
Mexican Long-tongued Bat	*Choeronycteris mexicana*
Eastern Pipistrelle	*Pipistrellus s. subflavus*
Evening Bat	*Nycticeius humeralis mexicanus*
Brazilian Freetail Bat	*Tadarida brasiliensis mexicana*
Armadillos	
Nine-banded Armadillo	*Dasypus novemcinctus*
Hares and Rabbits	
Eastern Cottontail	*Sylvilagus floridanus chapmani*
Black-tailed Jackrabbit	*Lepus californicus merriami*
Squirrels	
Mexican Ground Squirrel	*Spermophilus mexicanus parvidens*
Pocket Mice	
Silky Pocket Mouse	*Perognathus flavus merriami*
Hispid Pocket Mouse	*Chaetodipus h. hispidus*
Mexican Spiny Pocket Mouse	*liomys irroratus texensis*
New World Rats and Mice	
Marsh Rice Rat	*Oryzomys palustris aquaticus*
Coues' Rice Rat [TX-P]	*Oryzomys couesi aquaticus*

Fulvous Harvest Mouse	*Reithrodontomys fulvescens intermedius*
White-footed Mouse	*Peromyscus leucopus texanus*
Deer Mouse	*Peromyscus maniculatus*
Northern Pygmy Mouse	*Baiomys t. taylori*
Northern Grasshopper Mouse	*Onchomys leucogasterlongipes*
Hispid Cotton Rat	*Sigmodon hispidus berlandieri*
Southern Plains Woodrat	*Neotoma m. micropus*

Old World Rats and Mice

Norway Rat	*Rattus n. norvegicus*
Roof Rat	*Rattus rattus*
House Mouse	*Mus musculus*

Nutria

Nutria	*Myocastor coypus bonariensis*

Dolphins

Bottle-nosed Dolphin	*Tursiops truncatus*

Wild Canids

Coyote	*Canis latrans*
Gray Fox	*Urocyon cinereoargenteus scotti*

Raccoons

Raccoon	*Procyon lotor fuscipes*

Weasels

Long-tailed Weasel [TX-P]	*Mustela f. frenata*
Badger [TX-P]	*Taxidea taxus berlandieri*
Striped Skunk	*Mephitis mephitis*

Wild Cats

Bobcat	*Lynx rufus*

Mountain Lion [TX-P]	*Felis concolor*
Ocelot [TX-P]	*Leopardus pardalis*
Gulf Coast Jaguarundi [TX-P]	*Herpailurus yagouaroundi cacomitli*

Pigs

Feral Hog†	*Sus scrofa*

Peccaries

Collared Peccary	*Tayassu tajacu*

Deer

White-tailed Deer	*Odocoileus virginianus*

Cattle, Antelopes, and Allies

Nilgai antelope†	*Boselaphus tragocamelus*

[TX-P] - identified in the Texas Comprehensive Wildlife Conservation Strategy as a priority species
† - Introduced

A.5 Butterflies of Laguna Atascosa NWR

Swallowtails - *Family Papilionidae*

Pipevine Swallowtail	*Battus philenor*
Black Swallowtail	*Papilio polyxenes*
Giant Swallowtail	*Papilio cresphontes*
Ornythion Swallowtail	*Papilio ornythion*
Ruby-spotted Swallowtail	*Papilio anchisiades*

Whites and Sulphurs - *Family Pieridae*

Whites - *Subfamily Pierinae*

Florida White	*Appias drusilla*
Checkered White	*Pontia protodice*
Great Southern White	*Ascia monuste*

Giant White	*Ganyra josephina*
Common Melwhite	*Melete lycimnia isandra*
Sulphurs - *Subfamily Coliadinae*	
Orange Sulphur	*Colias eurytheme*
Southern Dogface	*Colias cesonia*
White Angled-Sulphur	*Anteos clorinde*
Yellow Angled-Sulphur	*Anteos maerula*
Cloudless Sulphur	*Phoebis sennae*
Orange-barred Sulphur	*Phoebis philea*
Large Orange Sulphur	*Phoebis agarithe*
Lyside Sulphur	*Kricogonia lyside*
Tailed Orange	*Eurema proterpia*
Little Yellow	*Eurema lisa*
Mimosa Yellow	*Eurema nise*
Sleepy Orange	*Eurema nicippe*
Dainty Sulphur	*Nathalis iole*

Gossamer-wing Butterflies - *Family Lycaenidae*

Hairstreaks - Subfamily Theclinae	
Great Purple Hairstreak	*Atlides halesus*
Silver-banded Hairstreak	*Chlorostrymon simaethis*
Xami Hairstreak	*Callophrys xami*
Gray Hairstreak	*Strymon melinus*
Mallow Scrub-Hairstreak	*Strymon istapa*
Red-crescent Scrub-Hairstreak	*Strymon rufofusca*
Lantana Scrub-Hairstreak	*Strymon bazochii*
White Scrub-Hairstreak	*Strymon albata*
Dusky-blue Groundstreak	*Calycopis isobeon*
Gray Ministreak	*Ministrymon azia*
Clytie Ministreak	*Ministrymon clytie*

Blues - Subfamily Polyommatinae

Western Pygmy-Blue	*Brephidium exile*
Cassius Blue	*Leptotes cassius*
Marine Blue	*Leptotes marina*
Cyna Blue	*Zizula cyna*
Ceraunus Blue	*Hemiargus ceraunus*
Reakirt's Blue	*Hemiargus isola*

Metalmarks - *Family Riodinidae*

Fatal Metalmark	*Calephelis nemesis*
Rounded Metalmark	*Calephelis perditalis*
Red-bordered Metalmark	*Caria ino*
Blue Metalmark	*Lasaia sula*

Brush-footed Butterflies - *Family Nymphalidae*

Snouts - Subfamily Libytheinae

American Snout	*Libytheana carinenta*

Heliconians and Fritillaries - Subfamily Heliconiinae

Gulf Fritillary	*Agraulis vanillae*
Julia Heliconian	*Dryas iulia*
Zebra Heliconian	*Heliconius charitonius*
Variegated Fritillary	*Euptoieta claudia*
Mexican Fritillary	*Euptoieta hegesia*

True Brush-foots - Subfamily Nymphalinae

Theona Checkerspot	*Thessalia theona*
Bordered Patch	*Chlosyne lacinia*
Elada Checkerspot	*Texola elada*
Definite Patch	*Chlosyne definita*
Texan Crescent	*Phyciodes texana*

Vesta Crescent	*Phyciodes vesta*
Phaon Crescent	*Phyciodes phaon*
Pearl Crescent	*Phyciodes tharos*
Question Mark	*Polygonia interrogationis*
American Lady	*Vanessa virginiensis*
Painted Lady	*Vanessa cardui*
Red Admiral	*Vanessa atalanta*
Common Buckeye	*Junonia coenia*
Tropical Buckeye	*Junonia genoveva*
White Peacock	*Anartia jatrophae*

Admirals and Relatives - Subfamily Limenitidinae

Mexican Bluewing	*Myscelia ethusa*
Dingy Purplewing	*Eunica monima*
Common Mestra	*Mestra amymone*
Red Rim	*Biblis hyperia*
Gray Cracker	*Hamadryas februa*
Guatemalan Cracker	*Hamadryas guatemalena*
Blue-eyed Sailor	*Dynamine dyonis*
Ruddy Daggerwing	*Marpesia petreus*
Many-banded Daggerwing	*Marpesia chiron*

Leafwings - Subfamily Charaxinae

Tropical Leafwing	*Anaea aidea*
Goatweed Leafwing	*Anaea andria*

Emperors - Subfamily Apaturinae

Hackberry Emperor	*Asterocampa celtis*
Tawny Emperor	*Asterocampa clyton*

Satyrs - Subfamily Satyrinae

Gemmed Satyr	*Cyllopsis gemma*
Carolina Satyr	*Hermeuptychia sosybius*

Monarchs - Subfamily Danainae

Monarch	*Danaus plexippus*
Queen	*Danaus gilippus*
Soldier	*Danaus eresimus*

Skippers - *Family Hesperiidae*

Spread-wing Skippers - Subfamily Pyrginae

Guava Skipper	*Phocides polybius*
Brown Longtail	*Urbanus procne*
White-striped Longtail	*Chioides catillus*
Zilpa Longtail	*Chioides zilpa*
Gold-spotted Aguna	*Aguna asander*
Long-tailed Skipper	*Urbanus proteus*
Dorantes Longtail	*Urbanus dorantes*
Teleus Longtail	*Urbanus teleus*
Two-barred Flasher	*Astraptes fulgerator*
Potrillo Skipper	*Cabares potrillo*
Fritzgaertner's Flat	*Celaenorrhinus fritzgaertneri*
Mazan's Scallopwing	*Staphylus mazans*
Texas Powdered-Skipper	*Systasea pulverulenta*
Sickle-winged Skipper	*Achlyodes thraso*
Brown-banded Skipper	*Timochares ruptifasciata*
White-patched Skipper	*Chiomara asychis*
Mournful Duskywing	*Erynnis tristis*
Funereal Duskywing	*Erynnis funeralis*
White Checkered-Skipper	*Pyrgus albescens*
Tropical Checkered-Skip.	*Pyrgus oileus*
Desert Checkered-Skip.	*Pyrgus philetas*
Laviana White-Skipper	*Heliopetes laviana*
Veined White-Skipper	*Heliopetes arsalte*
Turk's-cap White-Skipper	*Heliopetes macaira*

Erichson's White-Skipper	*Heliopetes domicella*
Common Sootywing	*Pholisora catullus*

Grass Skippers - Subfamily Hesperiinae

Pale-rayed Skipper	*Vidius perigenes*
Julia's Skipper	*Nastra julia*
Fawn-spotted Skipper	*Cymaenes odilia*
Clouded Skipper	*Lerema accius*
Double-dotted Skipper	*Decinea percosius*
Southern Skipperling	*Copaeodes minimus*
Fiery Skipper	*Hylephila phyleus*
Whirlabout	*Polites vibex*
Southern Broken-Dash	*Wallengrenia otho*
Sachem	*Atalopedes campestris*
Common Mellana	*Quasimellana eulogius*
Nysa Roadside-Skipper	*Amblyscirtes nysa*
Celia's Roadside-Skipper	*Amblyscirtes celia*
Eufala Skipper	*Lerodea eufala*
Olive-clouded Skipper	*Lerodea dysaules*
Brazilian Skipper	*Calpodes ethlius*
Obscure Skipper	*Panoquina panoquinoides*
Ocola Skipper	*Panoquina ocola*
Purple-washed Skipper	*Panoquina sylvicola*
Violet-banded Skipper	*Nyctelius nyctelius*

Notes:
Butterfly data compiled by Ellie Thompson, through July 31, 2007.

English names follow Cassie et al. 2001. NABA Checklist and English Names of North American Butterflies; Second Edition.

As of July 2007, 129 butterfly species have been reported at Laguna Atascosa NWR. The greatest diversity and number occur in the fall, generally peaking mid-October to mid-November. Diversity and numbers vary from year to year and are directly associated with the amount of rainfall—generous rainfall produces healthy plants on which they feed during the caterpillar stage. Also, some species can be common or abundant one year and rare or absent another year.

A.6 Plants

ACANTHACEAE

Wavyleaf snakeherb	*Dyschoriste crenulata*
Wheatspike scalystem	*Elytraria bromoides*
Runyon's wild petunia	*Ruellia runyonii var. runyonii*
Hairy tubetongue	*Siphonoglossa pilosella var. greggi*

AIZOACEAE

Lotus sweetjuice	*Glinus lotoides*
Spreading sweetjuice	*Glinus radiatus*
Green carpetweed	*Mollugo verticillata*
Shoreline seapurslane	*Sesuvium portulacastrum*
Winged sesuvium	*Sesuvium verrucosum*
Desert horsepurslane	*Trianthema portulacastrum*

ALISMATACEAE

Burhead	*Echinodorus berteroi (E. Cordifolius)*
Lanceheaf burhead	*Echinodorus tenellus*
Longlobe arrowhead	*Sagittaria longiloba*

AMARANTHACEAE

Smooth chaff flower	*Alternanthera polygonoides*
Berlandier amaranth	*Amaranthus berlandieri*
Gregg amaranth	*Amaranthus gregii*
Tropical amaranth	*Amaranthus polygonoides*
Bonebract amaranth	*Amaranthus scleropoides*
Albahaca	*Celosia nitida*
Nealley globe-amaranth	*Gomphrena nealleyi*
Woolly cottonflower	*Gossypianthus lanuginosus*
Woolly tidestromia	*Tidestromia lanuginosa var. lanuginosa*

AMARYLLIDACEAE

Century plant	*Agave americanum var. marginata*
Brazos rainlily	*Zephyranthes brazosensis*
Eveningstar rainlily	*Zephyranthes drummondii*
Showy zephyrlily	*Zephyranthes pulchella*

ANACARDIACEAE

Brazilian peppertree*† [NP]	*Schinus terebinthifolius*

ASCLEPIADACEAE

Zizotes milkweed	*Asclepias oenotheroides*
Horsetail milkweed	*Asclepias subverticillata*
Talayote	*Cynanchum unifarium*

ASTERACEAE (COMPOSITAE)

Featherleaf desertpeony	*Acourtia (Perezia) runcinata*
Brownfoot	*Acourtia (Perezia) wrightii*
Field ragweed	*Ambrosia confertiflora*
Western ragweed	*Ambrosia psilostachya*
Plains dozedaisy	*Aphanostephus ramosissimus*
Saltmarsh aster	*Aster subulatus var. ligulatus*
Seepwillow baccharis	*Baccharis glutinosa*
Willow baccharis	*Baccharis neglecta*
Sea ox-eye daisy	*Borrichia frutescens*
Prostrate lawnflower	*Calyptocarpus vialis*
Southern thistle	*Cirsium texanum*
Fleshyleaf clappia	*Clappia suaedaefolia*
Golden tickseed	*Coreopsis tinctoria var. tinctoria (Coreopsis cardaminaefolia)*
Yerba de tajo	*Eclipta prostrata (alba)*
Goldenbush	*Ericameria austrotexana*
Rio Grande fleabane	*Erigeron tenellus*
Pink thoroughwort	*Fleischmannia incarnata (Eupatorium incarnatum)*
Spring pygmycudweed	*Evax verna var. drummondii*

Sticky florestina	*Florestina tripteris*
Firewheel	*Gaillardia pulchella*
Indian blanket	*Gaillardia suavis*
Cudweed	*Gamochaeta pensylvanica (Gnaphalium peregrinum)*
Roundleaf snakeweed	*Gutierrezia sphaerocephala*
Gumhead	*Gymnosperma glutinosum*
Slimleaf sneezeweed	*Helenium linifolium*
Smallhead sneezeweed	*Helenium microcephalum*
Common sunflower	*Helianthus annuus*
Drummond's goldenbush	*Isocoma drummondii*
Narrowleaf marsh elder	*Iva angustifolia*
Annual marsh elder	*Iva annua*
Hairy lettuce	*Lactuca hirsuta var. albiflora*
Coulter's horseweed	*Laennecia coulteri (Conyza coulteri)*
Camphor daisy	*Machaeranthera phyllocephala*
Texas palafox	*Palafoxia texana var. ambigua*
False ragweed (feverfew)	*Parthenium hysterophorus*
Manzanilla bronca (rockdaisy)	*Perityle microglossa*
Marsh fleabane (stinkweed)	*Pluchea odorata (purpurascens)*
False dandelion	*Pyrrhopappus pauciflorus*
Mexican hat	*Ratibida peduncularis*
Yellow creeping zinnia	*Sanvitalia ocymoides*
Texas ragwort	*Senecio ampullaceus*
Butterweed	*Senecio tampicanus*
Mutis' burrweed	*Soliva mutisii*
Common sowthistle	*Sonchus oleraceus*
Blue boneset	*Tamaulipa azurea (Eupatorium azureum)*
Dogweed	*Thymophylla pentachaeta (Dyssodia p. var. p)*
Bristleleaf dogweed	*Thymophylla tenuiloba (Dyssodia t.)*
Limestone bugheal	*Trichocoronis wrightii*
Tropical threefold	*Trixis inula (Trixis radialis)*
Golden crownbeard	*Verbesina encelioides*
Texas crownbeard	*Verbesina microptera*

Hairy wedelia	*Wedelia texana (Zexmenia hispida)*

BASELLACEAE

Texas madeira vine	*Anredera vesicaria*

BATIDOCEAE

Maritime saltwort	*Batis maritima*

BORAGINACEAE

Gray coldenia	*Coldenia canescens*
Anacahuita (Wild olive)	*Cordia boissieri*
Scorpion's tail	*Heliotropium angiospermum*
Salt heliotrope	*Heliotropium curassavicum*
Indian heliotrope	*Heliotropium indicum*

BROMELIACEAE

Small ball moss	*Tillandsia recurvata*

CACTACEAE

Triangle cactus	*Acanthocereus pentagonus*
Turkshead echinocactus	*Echinocactus texensis*
Miniature barrel cactus	*Echinocactus (Thelocactus) setispinus*
Berlandier's alicoche	*Echinocereus berlandieri*
Blanck's echinocereus	*Echinocereus berlandieri var. blanckii*
Little nipple cactus	*Mammillaria heyderi var. hemisphaerica*
Nipple mammilaria	*Mammillaria sphaerica*
Christmas cactus	*Opuntia leptocaulis*
Texas pricklypear	*Opuntia engelmannii var. lindheimeri*

CALLITRICHACEAE

Nuttall water-starwort	*Callitriche nuttallii*

CAPPARIDACEAE

Prickly spiderflower	*Cleome aculeata*
Roughseed clammyweed	*Polanisia dodecandra*

CARYOPHYLLACEAE

Prostrate starwort	*Stellaria prostrata*

CELASTRACEAE

Leatherleaf	*Maytenus phyllanthoides*
Desert yaupon	*Schaefferia cuneifolia*

CHENOPODIACEAE

Armed saltbush	*Atriplex acanthocarpa*
Matamoros saltbush	*Atriplex matamorensis*
Crested saltbush	*Atriplex pentandra*
Texas saltbush	*Atriplex texana*
Wormseed goosefoot	*Chenopodium ambrosioides*
Pitseed goosefoot	*Chenopodium berlandieri*
Nettleleaf goosefoot	*Chenopodium murale*
Bigelow glasswort	*Salicornia bigelovii*
Woody glasswort	*Salicornia virginica*
Russian thistle*	*Salsola kali*
Beach seepweed	*Suaeda conferta*
Seepweed	*Suaeda linearis*

COCHLOSPERMACEAE

Yellowshow	*Amoreuxia wrightii*

COMMELINACEAE

Spreading dayflower	*Commelina diffusa*
Tropical dayflower	*Commelina elegans*
Erect dayflower	*Commelina erecta var. angustifolia*
Littleflower spiderwort	*Tradescantia micrantha*

CONVOLVULACEAE

Leafless cressa	*Cressa nudicaulis*
Dodder	*Cuscuta glabrior var. glabrior*
Bigseed alfalfa dodder	*Cuscuta indecora*
Ponyfoot	*Dichondra micrantha*
Slender dwarf morning-glory	*Evolvulus alsinoides*
Silver dwarf morning-glory	*Evolvulus sericeus*
Morning glory	*Ipomoea fistulosa*
Railroad vine	*Ipomoea pes-caprae var. emarginata*
Cotton morning-glory	*Ipomoea trichocarpa var. torreyana*

CRASSULACEAE

Coastal stonecrop	*Sedum texanum*

CRUCIFERAE

Southern pepperweed	*Lepidium austrinum*
Virginia pepperweed	*Lepidium virginicum var. virginicum*
Roughpod bladderpod	*Lesquerella lasiocarpa*
Lindheimer bladderpod	*Lesquerella lindheimeri*
Tansyleaf yellowcress	*Rorippa walteri*
Viereck's winged rockcress	*Sibara viereckii*
Rocket mustard	*Sisymbrium irio*

CUCURBITACEAE

Lindheimer's globeberry	*Ibervillea tenella (lindheimeri)*
Slimlobe globeberry	*Ibervillea lindheimeri var. tenuisecta*

CYPERACEAE

Taperleaf flatsedge	*Cyperus acuminatus*
Jointed flatsedge	*Cyperus articulatus*
Finger flatsedge	*Cyperus digitatus*
Sticky flatsedge	*Cyperus elegans*
Hermaphrodite flatsedge	*Cyperus hermaphroditus*

Pond flatsedge	*Cyperus ochraceus*
Tropical flatsedge	*Cyperus surinamensis*
One flower flatsedge	*Cyperus uniflorus, Cyperus uniflorus var. pseudothyrsiflorus*
Sand flatsedge	*Cyperus virens*
Needle spikesedge	*Eleocharis acicularis*
White spikesedge	*Eleocharis albida*
Sand spikesedge	*Eleocharis montevidensis*
Squarestem spikesedge	*Eleocharis quadrandgulata*
California bulrush	*Scirpus californicus*
Bulrush	*Scirpus maritimus*
Saltmarsh bulrush	*Scirpus maritimus var. paludosus*
Hall's Bulrush	*Scirpus supinus var. hallii*

EBENACEAE

Texas persimmon	*Diospyros texana*

EUPHORBIACEAE

Round copperleaf	*Acalypha heteracea*
Poiret copperleaf	*Acalypha poretii*
Low wildmercury	*Argythamnia humilis*
Brush myrtle croton	*Bernardia myricaefolia*
Woolly croton	*Croton capitatus var. lindheimeri*
Lindheimer croton	*Croton glandulosus var. lindheimeri*
Low croton	*Croton humilis*
Two-color croton	*Croton leucophyllus*
Three-seed croton	*Croton lindheimerianus*
Soliman's croton	*Croton soliman*
Spotted euphorbia	*Euphorbia maculata*
Mat euphorbia	*Euphorbia serpens*
Berlandier's nettlespurge	*Jatropha cathartica*
Leatherstem	*Jatropha dioica var. dioica*
Knotweed leafflower	*Phyllanthus polygonoides*
Castor bean*†	*Ricinus communis*

GENTIANACEAE

Buckley centaury	*Centaurium calycosum*
Tall prairie gentian	*Eustoma exaltatum*

HYDROPHYLLACEAE

Ovate false fiddleleaf	*Hydrolea ovata*
Spiny false fiddleleaf	*Hydrolea spinosa*
Jamaica weed	*Nama jamaicense*

LABIATAE

Brown's savory	*Clinopodium brownei (Micromeria brownei var. pilosiuscula)*
Shrubby blue sage	*Salvia ballotiflora*
Tropical sage	*Salvia coccinea*
Rio Grande skullcap	*Scutellaria muriculata*
Mousesear	*Stachys crenata*
Small coastal germander	*Teucrium cubense*

LEGUMINOSAE

Huisache	*Acacia farnesiana*
Huisachillo	*Acacia schaffneri var. bravoensis*
Joint-vetch	*Aeschynomone indica*
Nuttall milkvetch	*Astragalus nuttallianus*
Prairie senna	*Cassia fasciculata var. ferrisiae*
Lindheimer senna	*Cassia lindheimeriana*
Border paloverde*	*Cercidium macrum*
Shakeshake	*Crotalaria incana*
wedgeleaf prairie clover	*Dalea emarginata*
Purple dalea	*Dalea lasianthera*
Bearded dalea	*Dalea pogonathera*
Low dalea	*Dalea thyrsiflora*
Bundleflower	*Desmanthus virgatus var. depressus*
Texas ebony	*Ebenopsis ebano (Pithecellobium flexicaule)*

Kidneywood*	*Eysenhardtia texana*
Hoary milkpea	*Galactia canescens*
Indian rushpea	*Hoffmannseggia densiflora (H. glauca)*
Coast indigo	*Indigofera miniata*
Anil indigo	*Indigofera suffruticosa*
Tenaza	*Havardia pallens (Pithecellobium pallens)*
Tepeguaje (Great leadtree)	*Leucaena pulverulenta*
Black mimosa	*Mimosa pigra var. berlandieri*
Tropical neptunia	*Neptunia pubescens*
Retama	*Parkinsonia aculeata*
Honey mesquite	*Prosopis glandulosa*
Tornillo (Screwbean mesquite)	*Prosopis reptans var. cinerascens*
Gulf Indian breadroot	*Pediomelum rhombifolium (Psoralea rhombifolia)*
American snoutbean	*Rhynchosia americana*
Least snoutbean	*Rhynchosia minima*
Texas snoutbean	*Rhynchosia texana*
Sensitive brier	*Schrankia latidens*
Drummond sesbania	*Sesbania drummondii*
Coffeebean	*Sesbania macrocarpa*
Yellow sophora	*Sophora tomentosa*
Leavenworth vetch	*Vicia leavenworthii*

LEMNACEAE

Common duckweed	*Lemna minor*

LENTIBULARIACEAE

Humped bladderwort	*Utricularia gibba*

LILIACEAE

Lila de las lomas	*Echeandia texensis*
Lila de los llanos	*Echeandia chandleri*
Yellow false garlic (crowpoison)	*Nothoscordum bivalve*
Trecul Yucca	*Yucca treculeana*

LOGANIACEAE

Polly-prim	*Polypremum procumbens*

LORANTHACEAE

Christmas mistletoe	*Phoradendron serotinum var. pubescens*

LYTHRACEAE

Purple ammania	*Ammannia coccinea*
Willow-leaf heimia	*Heimia salicifolia*
California loosestrife	*Lythrum californicum*

MALPIGHIACEAE

Barbados cherry	*Malpighia glabra*

MALVACEAE

Indian-mallow	*Abutilon incanum*
Shrubby Indian mallow	*Abutilon lignosum*
Anglestem abutilon	*Abutilon trisulcatum*
Field anoda	*Anoda pentaschista (Anoda pentaschista var. obtusior)*
Viscid mallow	*Bastardia viscosa*
Bladdermallow	*Bogenhardia crispa (Herissantia crispa)*
Yellow fugosia	*Cienfuegosia sulphurea var. glabra*
Heartleaf hibiscus	*Hibiscus cardiophyllus*
Rio Grande falsemallow	*Malvastrum americanum*
Threelobe falsemallow	*Malvastrum coromandelianum*
Carolina modiola	*Modiola caroliniana*
Lozano false-abutilon	*Pseudabutilon lozani*
Bracted sida	*Sida ciliaris var. mexicana*
Spreading sida	*Sida filicaulis*
Violet sida	*Sida filipes*
Copper sida	*Sida helleri*
Showy sida	*Sida lindheimeri*
Southern sida	*Sida paniculata*

Spearleaf sida	*Sida physocalyx (Rhynchosida physocalyx)*
Prickly sida	*Sida spinosa*
Large-flowered velvetmallow	*Wissadula holosericea*
White velvetleaf	*Wissadula periplocifolia*

MARSILEACEAE

Hooked pepperwort	*Marsilea uncinata*

NAJADACEAE

Southern naiad	*Najas guadalupensis*

NYCTAGINACEAE

Berlandier trumpets	*Acleisanthes obtusa*
Scarlet spiderling	*Boerhaavia coccinea*
Erect spiderling	*Boerhaavia erecta*

NYMPHAEACEAE

Señorita waterlily	*Nymphaea elegans*

OLEACEAE

Texas swampprivet	*Forestiera angustifolia*
Mexican ash	*Fraxinus berlandieriana*
Low menodora	*Menodora heterophylla*

ONAGRACEAE

Wavyleaf beeblossom	*Gaura sinuata*
Wolly beeblossom	*Gaura villosa*
Large-flower primrose-willow	*Ludwigia grandiflora ssp. grandiflora (Jussiaea repens)*
Kunth sundrops	*Oenothera kunthiana*
Cutleaf evening primrose	*Oenothera laciniata*
Yellow sundrops	*Oenothera serrulata (Calylophus serrulatus)*
Pink evening primrose	*Oenothera speciosa*

OROBANCHACEAE

Louisiana broomrape	*Orobanche ludoviciana*

OXALIDACEAE

Ponyleaf oxalis	*Oxalis dichondraefolia*
Yellow woodsorrel	*Oxalis dillenii*
Drummond's woodsorrel	*Oxalis drummondii*

PALMACEAE

Date palm*	*Phoenix canariensis*

PAPAVERACEAE

Prickly poppy	*Argemone aenea*
Spiny prickly poppy	*Argemone sanguinea*

PASSIFLORACEAE

White passionflower	*Passiflora foetida var. gossypifolia*
Corkystem passionflower	*Passiflora suberosa*

PHYTOLACCACEAE

Snake eyes	*Phaulothamnus spinescens*
Bloodberry	*Rivina humilis*

PLANTAGINACEAE

Redseed plantain	*Plantago rhodosperma*

PLUMBAGINACEAE

Sea lavender	*Limonium nashii (carolinianum)*
White plumbago (Hierba de Alacrán)	*Plumbago scandens*

POACEAE (GRAMINEAE)

Winter bentgrass	*Agrostis hyemalis*
Six-weeks threeawn	*Aristida adscensionis*

Roemer threeawn	*Aristida roemeriana*
King Ranch bluestem*†	*Bothriochloa Ischaemum var. songarica*
Longspike silver bluestem	*Bothriochloa saccharoides*
Red grama	*Bouteloua trifida*
Buffalograss	*Buchloe dactyloides*
Southern sandbur	*Cenchrus echinatus*
Coast sandbur	*Cenchrus incertus*
Slimspike windmill grass	*Chloris andropogonoides*
Buryseed chloris	*Chloris chloridea*
Fringed chloris	*Chloris ciliata*
Hooded windmill grass	*Chloris cucullata*
Rhodes grass*	*Chloris gayana*
Nash windmill grass	*Chloris latisquamea*
Bermuda grass*†	*Cynodon dactylon*
Durban crowfootgrass	*Dactyloctenium aegyptium*
Kleberg bluestem*†	*Dichanthium annulatum*
Silky bluestem*	*Dichanthium sericeum*
Tropical crabgrass	*Digitaria diversiflora*
Seashore saltgrass	*Distichlis spicata*
Junglerice	*Echinochloa colonum*
Coast cockspur	*Echinochloa colonum*
Mediterranean lovegrass	*Eragrostis barrelieri*
Common annual weed	*Eragrostis diffusa*
Red lovegrass	*Eragrostis oxylepis*
Hairy creeping lovegrass	*Eragrostis reptans*
Tumble lovegrass	*Eragrostis sessilispica*
Spike lovegrass	*Eragrostis spicata*
Prairie cupgrass	*Eriochloa contracta*
Louisiana cupgrass	*Eriochloa punctata*
Texas cupgrass	*Eriochloa sericea*
Tanglehead	*Heteropogon contortus*
Little barley	*Hordeum pusillum*
Clubhead cutgrass	*Leersia hexandra*

Dominican sprangletop	*Leptochloa domingensis*
Green sprangletop	*Leptochloa dubia*
Red sprangletop	*Leptochloa filiformis*
Nealley sprangletop	*Leptochloa nealleyi*
Mexican sprangletop	*Leptochloa uninervia*
Tropic sprangletop	*Leptochloa virgata*
Fall witchgrass	*Leptoloma cognatum*
Ozarkgrass	*Limnodea arkansana*
Shoregrass	*Monanthochloe littoralis*
Blue panicum*	*Panicum antidotale*
Southern witchgrass	*Panicum capillarioides*
Browntop millet	*Panicum fasciculatum*
Filly panicum	*Panicum filipes*
Guineagrass*	*Panicum maximum*
Vine-mesquite	*Panicum obtusum*
Sprawling panicum	*Panicum reptans*
Texas panicum	*Panicum texanum*
Whiplash pappus grass	*Pappophorum mucronulatum*
Egyptian Paspalum	*Paspalidium geminatum*
Brook paspalum	*Paspalum acuminatum*
Knotgrass	*Paspalum distichum*
Hartweg paspalum	*Paspalum hartwegianum*
Rustyseed paspalum	*Paspalum langei*
Longtom	*Paspalum lividum*
Fringed-leaf paspalum	*Paspalum setaceum var. ciliatifolium*
Seashore paspalum	*Paspalum vaginatum*
Buffelgrass*†	*Pennisetum ciliare (Cenchrus ciliaris)*
Plains bristlegrass	*Setaria macrostachya*
Texas bristlegrass	*Setaria texana*
Hooked bristlegrass	*Setaria verticillata*
Johnsongrass*†	*Sorghum halepense*
Marshay cordgrass	*Spartina patens var. juncea*
Gulf cordgrass	*Spartina spartinae*

Sand dropseed	*Sporobolus cryptandrus*
Whorled dropseed	*Sporobolus pyamidatus*
Padre Island dropseed	*Sporobolus tharpii*
Seashore dropseed	*Sporobolus virginicus*
Big sacaton	*Sporobolus wrightii*
Texas wintergrass	*Stipa leucotricha*
Fourflower trichloris	*Trichloris pluriflora*
White tridens	*Tridens albescens*
Texas tridens	*Tridens texanus*
Seaoats	*Uniola paniculata*
Texas willkommia	*Willkommia texana*

POLEMONIACEAE

Splitleaf gilia	*Giliastrum incisum (Gilia incisa)*

POLYGALACEAE

White milkwort	*Polygala alba*

POLYGONACEAE

Smartweed	*Polygonum punctatum*
Amamastla	*Rumex chrysocarpus*
Winged dock	*Rumex spiralis*

PONTEDERIACEAE

Liebmann mudplantain	*Heteranthera liebmannii*
Blue mudplantain	*Heteranthera limosa*
Mudplantain	*Heteranthera reniformis*

PORTULACACEAE

Shaggy portulaca	*Portulaca pilosa*
Winged portulaca	*Portulaca umbraticola*
Orange flameflower	*Talinum aurantiacum*
Panicled flameflower	*Talinum paniculatum*

POTAMOGETONACEAE

Shoalgrass	*Diplanthera wrightii*
Widgeongrass	*Ruppia maritima*
Horned pondweed	*Zannichellia palustris*

PRIMULACEAE

Scarlet pimpernel	*Anagallis arvensis*
Brookweed	*Samolus parviflorus*

RANUNCULACEAE

Drummond's clematis	*Clematis drummondii*

RHAMINACEAE

Brasil	*Condalia hookeri var. hookeri*
Coyotillo	*Karwinskia humboldtiana*
Lotebush	*Ziziphus obtusifolia*

RUBIACEAE

Prairie bluets	*Hedyotis nigricans*
Nodding bluets	*Hedyotis subviscosa*
Crucillo	*Randia rhagocarpa*
Prairie Mexican clover	*Richardia tricocca (Crusea tricocca)*
Slender buttonweed	*Spermacoce tenuior*

RUTACEAE

Mexican amyris	*Amyris medrensis*
Chapatillo	*Amyris texana*
Texas desertrue	*Thamnosma texana*
Colima	*Zanthoxylum fagara*

SALICACEAE

Black willow	*Salix nigra*

SALVINIACEAE

Mosquito-fern	*Azolla caroliniana*

SAPINDACEAE

Tropical heartseed	*Cardiospermum corindum L.f. villosum*

SAPOTACEAE

Coma	*Bumelia celastrina*

SCROPHULARIACEAE

Seaside gerardia	*Agalinis maritima*
Waterhyssop	*Bacopa procumbens*
Disk waterhyssop	*Bacopa rotundifolia*
Cenizo	*Leucophyllum frutescens*
Speedwell (neckweed)	*Veronica peregrina var. xalapensis*

SIMAROUBACEAE

Allthorn	*Castela texana*

SOLANACEAE

Chilipiquín (bird pepper)	*Capsicum annuum var. glabriusculum (minus)*
Hairy false-nightshade	*Chamaesaracha sordida*
Berlandier wolfberry	*Lycium berlandieri*
Carolina wolfberry	*Lycium carolinianum*
Netted globeberry	*Margaranthus solanaceus*
Tree tobacco*†	*Nicotiana glauca*
Wild petunia	*Petunia parviflora*
Beach groundcherry	*Physalis viscosa var. cinerascens*
Silver-leaf nightshade	*Solanum elaeagnifolium*
American black nightshade	*Solanum americanum (S. Nodiflorum)*
Buffalobur nightshade	*Solanum rostratum*
Texas nightshade	*Solanum triquetrum*

STERCULIACEAE

Dwarf ayenia	*Ayenia pusilla (A. pilosa, A. insulicola)*

TAMARICACEAE

Athel (Saltcedar)*† NP	*Tamarix aphylla*

TYPHACEAE

Narrowleaf cattail	*Typha domingensis*

ULMACEAE

Sugar hackberry	*Celtis laevigata*
Granjeño (Spiny hackberry)	*Celtis spinosa var. pallida*
Cedar elm	*Celtis crassifolia*

UMBELLIFERAE

Plains sand-parsley	*Ammoselinum popei*
Slimlobe celery	*Apium leptophyllum*
Southwestern carrot	*Daucus pusillus*
Hierba del sapo	*Eryngium nasturtiifolium*
Prairie dogshade	*Limnosciadium pumilum*

URTICACEAE

Pellitory	*Parietaria obtusa*
Heartleaf nettle	*Urtica chamaedryoides var. runyonii*

VERBENACEAE

Whitebrush	*Aloysia gratissima*
Berlandier's fiddlewood	*Citharexylum berlandieri*
Dakota mock vervain	*Glandularia bipinnatifida var. bipinnatifida (Verbena bipinnatifida)*
Davis Mountain mock vervain	*Glandularia bipinnatifida var. ciliata (Verbena ciliata)*
Rio Grande mock vervain	*Glandularia polyantha (Verbena ciliata var. longidentata)*
Largeleaf lantana	*Lantana camara*

Texas lantana	*Lantana horrida*
Veinyleaf lantana	*Lantana macropoda*
White lippia	*Lippia alba*
Scented lippia	*Lippia graveolens*
Sawtooth frogfruit	*Phyla incisa*
Turkeytangle	*Phyla nodiflora*
Gray vervain	*Verbena canescens*
Texas vervain	*Verbena halei*
Fanleaf vervain	*Verbena plicata*
Fourangle vervain	*Verbena quadrangulata*
Rio Grande vervain	*Verbena runyonii*
Gulf vervain	*Verbena xutha*

VIOLACEAE

Nodviolet	*Hybanthus verticillatus var. platyphyllus*

VITACEAE

Ivy treevine (Sorrelvine)	*Cissus incisa (trifoliata)*

ZYGOPHYLLACEAE

Hairy caltrop	*Kallistroemia hirsutissima*
Guayacan	*Porlieria angustifolia*

** - Introduced*

† - Plants on the "Invaders of Texas" early detection program list: http://Texasinvasives.org

[NP] - Noxious plant as identified in the State Noxious Weeds List.

References:

Richardson, A. 1995. Plants of the Rio Grande Delta. Univ. of Texas Press, Austin, TX. 332pp.

U.S. Department of Agriculture-NRCS, Plants Database at http://plants.usda.gov/index.html

B. FEDERAL THREATENED AND ENDANGERED SPECIES – LAGUNA ATASCOSA NWR*

Ocelot *(Leopardus pardalis)*	E
Gulf Coast jaguarundi *(Herpailurus yagouaroundi cacomitli)*	E
Northern aplomado falcon *(Falco femoralis septentrionalis)*	E
Brown pelican *(Pelecanus occidentalis)*	E
Piping plover *(Charadrius melodus)*	T
Kemp's ridley sea turtle *(Lepidochelys kempii)*	E
Loggerhead sea turtle *(Caretta caretta)*	T
Green sea turtle *(Chelonia mydas)*	T
Hawksbill sea turtle *(Eretmochelys imbricata)*	E

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E (Endangered)= Any species which is in danger of extinction throughout all or a significant portion of its range.

T (Threatened)= Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

** - List of federally-threatened and endangered species that regularly occur and depend on the habitats of the Refuge, either seasonally or permanently. Accidentals or hypothetical listed species are not included for the purposes of this CCP.*

C. TEXAS THREATENED AND ENDANGERED SPECIES– LAGUNA ATASCOSA NWR*

Ocelot (*Leopardus pardalis*)	E
Jaguarundi (*Herpailurus yagouaroundi)*	E
Coues' Rice Rat (*Oryzomys couesi*)	T
Peregrine Falcon (*Falco peregrinus*)	T
Northern aplomado falcon (*Falco femoralis septentrionalis*)	E
Brown pelican (*Pelecanus occidentalis*)	E
Piping plover (*Charadrius melodus*)	T
Northern Beardless-Tyrannulet (*Camptostoma imberbe*)	T
Reddish Egret (*Egretta rufescens*)	T
Texas Botteri's Sparrow (*Aimophila botterii texana*)	T
White-faced Ibis (*Plegadis chihi*)	T
Wood Stork (*Mycteria americana*)	T
Kemp's ridley sea turtle (*Lepidochelys kempii*)	E
Loggerhead sea turtle (*Caretta caretta*)	T
Green sea turtle (*Chelonia mydas*)	T
Hawksbill sea turtle (*Eretmochelys imbricata*)	E
Black-striped Snake (*Coniophanes imperialis*)	T
Indigo Snake (*Drymarchon corais*)	T
Texas Horned Lizard (*Phrynosoma cornutum*)	T
Texas Tortoise (*Gopherus berlandieri*)	T
Black-spotted Newt (*Notophthalmus meridionalis*)	T
Sheep Frog (*Hypopachus variolosus*)	T
South Texas Siren (*Siren intermedia ssp.*)	T

** List of State-threatened and endangered species that regularly occur and depend on the habitats of the Refuge, either seasonally or permanently. Accidentals or hypothetical listed species are not included for the purposes of this CCP. Source: Texas Parks and Wildlife Department, Wildlife Division, Diversity and Habitat Assessment Programs. County Lists of Texas' Special Species (Cameron and Willacy County; Revision Date: 7/16/2009). Current TPWD county lists for rare species may be obtained from the following link: http://tpwd.state.tx.us/*

D. APPROPRIATE REFUGE USES AND COMPATIBILITY DETERMINATIONS

Appropriate Refuge Uses Policy

The Appropriate Refuge Uses Policy (Service Manual 603 FW 1) clarifies and expands on the compatibility policy (Service Manual 603 FW 2.10D), which describes when refuge managers should deny a proposed use without determining compatibility. When a use is determined to be appropriate, the refuge manager must then determine if the use is compatible before it may be allowed on the refuge. With the exception of the six wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation), and the take of fish and wildlife under State regulations, the refuge manager will decide if a new or existing use is an appropriate refuge use. If an existing use is not appropriate, the refuge manager will eliminate or modify the use as expeditiously as practicable. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility.

Compatibility Determinations

These draft compatibility determinations describe the wildlife-dependent and other uses that may be included in the public use program under the proposed alternative and determines the conditions under which each use is considered compatible with the purposes of the Refuge or with the mission of the National Wildlife Refuge System. Under the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, and the Refuge Recreation Act of 1962, the Service may not permit recreational uses on a national wildlife refuge unless these uses are first determined to be compatible, wildlife-dependent uses. The 1997 Improvement Act now requires that the needs of fish, wildlife, and plant resources on national wildlife refuges come first. A use is compatible if is determined that the activity does not materially interfere with, or detract from, the fulfillment of the National Wildlife Refuge System mission or the purposes of the Refuge. Furthermore, compatible activities that depend on healthy fish and wildlife populations will be recognized as priority public uses. The 1997 Improvement Act established the priority public uses to be hunting, fishing, wildlife observation and photography, and environmental education and interpretation. The following uses were evaluated to determine their compatibility with the purposes of the Refuge and the Refuge System mission:

Compatibility Determinations for Laguna Atascosa NWR:

Issue	CD issuance date	CD review date
A. Thomae Jr. County Park Cooperative Mgmt. Agreement	1994	2011

DRAFT COMPATIBILITY DETERMINATION

USE: Beach-related, Non-wildlife Dependent Recreational Uses

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: In the 1999 Laguna Atascosa NWR Refuge Expansion Plan, the U.S. Fish and Wildlife Service stated that it would support and cooperate with the Texas Open Beaches Act, which provides for public access on all Texas Gulf beaches. The law requires public access to Gulf beaches from the line of mean low water, inland to the vegetation line. This will ensure the continued enjoyment by the public of traditional beach recreational activities such as beach combing, swimming, fishing, overnight camping, horseback riding, and other legal public uses. These, non-wildlife dependent recreational activities will continue to be allowed on the "open beaches" of the South Padre Island Unit, as defined by the Texas Open Beaches Act, and as stated in the 1999 Refuge Expansion Plan. Sensitive wildlife habitat, such as the dunes and tidal flats located inland, are not open to these activities.

AVAILABILITY OF RESOURCES: The main Refuge costs to manage this use are for law enforcement and litter clean-up. Resources to manage this use are marginal at best, given the size of the Refuge and the number of users. Refuge law enforcement staff are shared between the three refuges in the South Texas Refuge Complex, which limits the amount of staff time that can be spent managing this use. Other law enforcement personnel from State, county, and local agencies may assist with oversight of this use. Although not optimum, funding and staffing are available to allow this use at current levels. Strategies in the Comprehensive Conservation Plan call for additional staffing, funding, signage, and partnerships, which should help to manage these uses.

ANTICIPATED IMPACTS OF THE USE: Past experience indicates that most of the impacts would involve some violation of Refuge regulations (e.g., disturbing wildlife, removing plants, trespass, free roaming pets, vandalism, and littering). Human activity may

disturb migratory birds utilizing the Refuge's habitats for feeding or nesting. Endangered sea turtles, such as the Kemp's ridley, nest in the beach area where human recreational activity occurs. Recreational activity on the beach can potentially lead to soil compaction, vegetation trampling, and the introduction of invasive plants. Litter discarded by visitors can entangle wildlife or be ingested, resulting in injury or death.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Beach-related, non-wildlife dependent recreational uses are only allowed on the open beach area, as defined in the Texas Open Beaches Act.

2. Domestic animals (e.g., dogs, cats, horses) would be kept on a leash or confined to prevent free-roaming and disturbing wildlife.

3. Feeding of wildlife would be prohibited on the open beach area.

4. Target shooting and unauthorized discharge of firearms would be prohibited.

5. Searching for treasure and the removal or disturbance of artifacts or items of antiquity would be prohibited.

6. Only small campfires or grill fires would be allowed. Firewood would only be collected on the beach.

JUSTIFICATION: The Refuge would continue to support and cooperate with the Texas Open Beaches Act. The "open beach" areas would be appropriately signed and patrolled to provide additional protection to ensure that non-wildlife dependent recreational uses do not occur in areas where they are prohibited, such as dunes and tidal flats.

With these stipulations in place, beach-related, non-wildlife dependent recreational use is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Bicycling

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: To increase wildlife observation and photography opportunities, four back-country hiking and bicycling trails, with associated trailheads, have been designated along service roads (see attached map). These trails range from 4 to 20 miles in length. Bicycling, as a means to enjoy nature and observe wildlife, continues to be popular each year, particularly on the more accessible, paved Bayside Wildlife Drive. The Refuge is proposing to create up to four additional trails on the Bahia Grande Unit that would originate near the main entrances along State Highway 48). In addition, the Refuge is proposing to provide a bicycle rental program in partnership with the Friends of Laguna Atascosa NWR to improve access to more remote wildlife viewing locations (e.g., Kidney Pond) not accessible by motorized vehicles

AVAILABILITY OF RESOURCES: Bicycling is one of the main methods of travel on the Refuge by visitors, in addition to motorized vehicles and walking. Current staffing levels provide minimal staff oversight of bicycling opportunities and maintenance of roads and trails open to bicycling. To increase and enhance bicycling opportunities on the Refuge, additional staff are needed, as well as funding for the new proposed trails. The additional staffing needs are outlined in the CCP.

ANTICIPATED IMPACTS OF THE USE: Past experience indicates that most of the impacts will involve some violation of Refuge regulations (e.g., off-road bicycling, disturbing wildlife, trespass, vandalism, and littering).

Human activity may disturb migratory birds utilizing the Refuge's habitats for feeding or nesting. Off-trail human activity can potentially lead to soil compaction, vegetation trampling,

and the introduction of invasive plants. Litter discarded by visitors can entangle wildlife or be ingested, resulting in injury or death.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Bicycling access would be limited to daylight hours only.

2. Bicycling would be conducted only on specially-designated trails and roads.

3. Organized bicycling groups (10 or more bicyclists) would be required to request a special use permit.

4. Bicycling would only be allowed as a means to facilitate other wildlife-dependent recreational uses (e.g., fishing, wildlife observation).

JUSTIFICATION: This use would facilitate priority wildlife-dependent uses (e.g., hunting, wildlife observation). With these stipulations in place, bicycling is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Boating

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES): Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) "*...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) "*...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) "*...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and "*...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude...",* Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: Currently, boating is allowed on State-navigable waters (e.g., Harlingen Ship Channel, San Martín Lake) within the Refuge. Adolph Thomae Jr. County Park, which is part of the Refuge, provides an important public boating access point to the lower Laguna Madre, as the nearest public boat ramps are located 25 miles to the south, and 20 miles to the north of the Park. Currently, about 70 percent of the park's annual visitation (91,000 to 105,000 people) come to fish, many using boats. The Comprehensive Conservation Plan proposes to enhance and expand fishing opportunities by 2015 and to improve the quality of wildlife observation and photography by 10 percent over current levels by 2018 by allowing non-motorized watercraft (e.g., canoe and kayak) in the Bahia Grande and to develop a canoe and kayak launch site for the Laguna Atascosa and Bahia Grande units. In addition, designated access routes for motorized vehicles at traditional access locations (e.g., washovers) from the public beach side on South Padre Island to designated sites along the shore of the Laguna Madre are proposed to allow boating access to the bay.

AVAILABILITY OF RESOURCES: The main Refuge costs to manage existing and proposed boating uses are law enforcement, signage, and facility maintenance. Resources to manage this use are marginal at best, given the size of the Refuge and the number of users. Refuge law enforcement staff are shared between the three refuges in the South Texas Refuge Complex, which limits the amount of staff time that can be spent managing this use. Texas Parks and Wildlife Department law enforcement personnel would assist with enforcing boating regulations. Although not optimum, funding and staffing are available to allow this use at current and proposed levels. Strategies in the Comprehensive Conservation Plan call for additional staffing, funding, signage, facilities, and partnerships, which would help to manage this use.

ANTICIPATED IMPACTS OF THE USE: Non-motorized boating would cause minimal temporary disturbance to waterbirds, waterfowl, and other wildlife using the open water and nesting areas. Canoe and kayak access sites have the potential to impact vegetation as boaters trample vegetation in order to access the waters. Boating may have impacts to seagrasses. Use of motorized vehicles to access beach and bay fishing sites would disturb wildlife and impact habitat.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

___X_ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Only non-motorized boating (i.e., canoe and kayak) would be allowed in the Bahia Grande.

2. Boating would only be allowed as a means to facilitate other wildlife-dependent recreational uses (e.g., fishing, wildlife observation).

3. Boating would be conducted only from designated launch sites, in specially-designated areas, and during specific periods to reduce disturbance to wildlife.

JUSTIFICATION: This use would facilitate priority wildlife-dependent uses (e.g., fishing, wildlife observation). With these stipulations in place, boating is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Environmental Education and Interpretation

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: To increase curriculum-specific EE program attendance by 15–20 percent over current levels by 2018, with an emphasis on reaching diverse audiences, and updating visitor facilities and signage, the Refuge proposes to:

1. write and implement a Visitor Services Plan by 2011;
2. convert the old display area in the visitor center into a multipurpose room to be used for interpretive and educational programs (e.g., school groups), public meetings, and other presentations;
3. develop sea turtle, endangered species, bird adaptation, and wetland EE programs, in accordance with State curriculum standards, for elementary and high schools in partnership with local ISDs;
4. conduct at least one "Project Wild" or equivalent session or teacher workshop annually to prepare educators to incorporate the Refuge as an outdoor classroom for their students;
5. develop educational packets and lesson plans, in accordance with State curriculum standards, about Refuge habitats that can be used by educators on Refuge field trips with minimal staff assistance;
6. apply for grants to fund Refuge field trips and obtain EE supplies in partnership with Friends of Laguna Atascosa, local ISDs, and other partners;

7. establish a visitor contact station and a research field station (in partnership with local universities and ISDs) as a facility for conducting outdoor classroom activities at Bahia Grande;
8. provide ADA-compliant restroom facilities at two locations on the Bahia Grande Unit for school groups engaged in outdoor classroom activities;
9. construct a new visitor center to new Service standards, including land acquisition of a suitable site (e.g., 35 or more acres) along FM 106, near the current intersection of General Brant Road and Buena Vista Road;
10. develop interpretive programs in a digital format (e.g., CD/DVD, MP3, etc.) for use on the Refuge (e.g., podcasts, geocaching, Web site checklists);
11. evaluate all existing and future Refuge programs and materials to ensure they are ADA-compliant;
12. renovate existing visitor center restrooms to be ADA-compliant or construct new ADA restroom facilities;
13. acquire an ADA-compliant tour vehicle (e.g., tram or 4x4 van);
14. install an ADA-compliant restroom facility along Bayside Wildlife Drive (e.g., at the Redhead Ridge parking lot);
15. add or update interpretive panels focusing on wetlands habitats at popular visitor locations, including Alligator Pond, Osprey Overlook, Pelican Lake, Bahia Grande, and SH 100 pullout area west of Laguna Vista;
16. update or replace existing interpretive panels along Bayside Wildlife Drive;
17. install directional signs and an informational kiosk for Whitetail Trail (Management Unit 1);
18. develop an interpretive brochure, flyer, or audio/visual material that describes the wildlife resources and habitats on the South Padre Island Unit, in partnership with Cameron County Parks Division and others;
19. update or add entrance and informational signage at appropriate Refuge entrance locations;
20. develop a partnership and volunteer support of South Padre Island World Birding Center;
21. update Refuge brochure, bird checklist, and other popular brochures and flyers; replace interpretive panels at visitor center kiosk and improve or enhance accessibility of the wildlife observation area adjacent to the kiosk;
22. review and update all current interpretive programs to include basic principles of interpretation; incorporate principles of universal design (e.g., accessibility) and Service themes and messages;
23. create new guided bird tours, walks, and interpretive programs for the Bahia Grande and South Padre Island units to include basic principles of interpretation, principles of universal design (e.g., accessibility), and Service themes and messages;

24. provide guided kayak and tram tours in partnership with the Friends of Laguna Atascosa NWR;
25. evaluate the establishment of at least one self-guided interpretive canoe and kayak paddling trail;
26. interpret Refuge-specific historical or cultural resources through interpretive panels, brochures, or other media by 2014;
27. develop and implement at least five special annual events (or partner with existing events) such as Ocelot Conservation Festival, Christmas Bird Count, National Fishing Day, National Wildlife Refuge Week, International Migratory Bird Day, and Teacher Appreciation Weekend;
28. involve tourist boards and Chambers of Commerce in program development and promotion;
29. update the Refuge Web site to include appropriate links to the Friends group and partners by 2010; train all staff to present programs to government, civic, sporting, and interest groups on a variety of Refuge-related topics and issues; include information about the economic and wildlife-dependent recreational benefits that the Refuge provides;
30. continue developing partnerships with hotels, businesses, media outlets, and Cameron County Parks and Recreation Department to educate residents, tourists, and recreational anglers about sea turtle nesting on local beaches;
31. develop and purchase supplies and obtain an interchangeable, portable exhibit representing all units of the Refuge and its varied management programs, goals, and recreational opportunities by 2010; and
32. develop news releases for local and State newspapers, magazines, and other media outlets, as needed.

AVAILABILITY OF RESOURCES: Direct costs to administer the current environmental education and interpretation programs are in the form of staff time. Additional funding would be required to prepare and implement a Visitor Services Plan and its associated step down plans. Major expenses would involve construction of a visitor contact station and a research field station at Bahia Grande; a new visitor center, including land acquisition of a suitable site along FM 106; renovation of existing visitor center restrooms to ADA-compliance or construction of new ADA-compliant restroom facilities; construction of new interpretive signs; and replacing existing interpretive signs.

To implement and administer the proposed environmental education and interpretive programs described, the following staffing, materials and/or facilities would be required.

Adequate staff positions and financial resources are currently available and committed to manage the continuation of existing opportunities for environmental education and interpretation. The current Refuge budget is not adequate to fund the additional environmental education and interpretive programs proposed in the Comprehensive Conservation Plan. Projects would need to be broken into phases while funding sources are

identified. Potential sources for additional funding include Federal cost share grants, State environmental education grants, private funding sources, and contributions from the Refuge's Friends group.

ANTICIPATED IMPACTS OF THE USE: Potential impacts associated with the continued and expanded implementation of environmental education and interpretation programs would result in some temporary, localized disturbance to wildlife. Future increases in facilities and participants would cause some displacement of habitat and increase in disturbance, but this is negligible given the controlled nature of environmental education and the size of the Refuge. These types of impacts would be minimized through appropriate program design, adequate Refuge oversight, supervision of educational activities, and ongoing coordination among partners.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Environmental education and interpretation activities would be coordinated by Refuge staff.

2. Strategic planning and construction of new facilities and infrastructure would be coordinated by Refuge staff.

JUSTIFICATION: A primary goal of the Refuge System is connecting people with nature, and environmental education and interpretation are among the priority wildlife-dependent uses on refuges. In addition, many of the interpretive facilities, programs, signs, brochures, exhibits, and kiosks are 10–20 years old and need to be updated, especially on the newly acquired tracts (e.g., Bahia Grande).

Most environmental education will occur at, or be directed to, existing and future facilities in strategic locations, providing quality opportunities while limiting wildlife and habitat disturbance. Disturbance is typically short-term and should only temporarily displace wildlife. Adequate habitat is usually available for wildlife nearby. The approval process for groups will limit disturbance to wildlife and ensure avoidance of sensitive areas.

As one of the priority wildlife-dependent public uses of the National Wildlife Refuge System, this use is to be encouraged when compatible with the purpose of the Refuge. The Refuge provides excellent environmental education opportunities due to the diversity of wildlife and habitat on the Refuge and the range of environmental issues faced. With these stipulations in place, environmental education and interpretation is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Hunting

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) "*...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) "*...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* , Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: The primary objectives of the hunting program on Laguna Atascosa NWR are: 1) to provide a quality recreational and educational experience for a diverse audience; and 2), to manage and control exotic wildlife. White-tailed deer hunting on Laguna Atascosa NWR is one of the most popular public hunts in the Lower Rio Grande Valley, especially for local hunters. Archery hunts have been held annually since 1970, and firearm hunts have been held annually since 1979. These hunts are by Refuge permit only and are conducted during specific periods within the State's hunting season. Special youth hunts and exotic-only hunts (e.g., feral hog and nilgai antelope) have recently been established. Special hunts are by Refuge permit only and may occur at any time during the year. Approximately 20,000 acres of the Laguna Atascosa Unit are currently open to hunting. The Refuge population of white-tailed deer is healthy and stable, and good deer habitat is abundant, primarily on the Laguna Atascosa Unit.

The current hunt plan will be revised to evaluate current and proposed hunting opportunities. New opportunities may include:

1. development of a migratory bird hunting program (e.g., waterfowl and doves), an upland game bird hunting program (e.g., quail), and a big game hunting program (e.g., nilgai antelope and feral hogs) on the Bahia Grande Unit;

2. development of a migratory bird hunting program (e.g., doves) and an upland game bird hunting program (e.g., quail) on the Laguna Atascosa Unit;

3. opening Management Unit 4 (area north of the Harlingen Ship Channel) to white-tailed deer and exotic hunting and to waterfowl hunting on the Laguna Atascosa Unit;

4. developing quality, special hunts for youths (e.g., family), individuals with disabilities, and underrepresented groups; and
5. updating the Refuge Web site to provide public hunting information (e.g., application forms and Refuge hunting regulations).

AVAILABILITY OF RESOURCES: Funding for the hunt program is supported by annual operating and Recreational Fee Program funds. Funds are used to cover administrative costs such as staff salaries, law enforcement coverage, hunt monitoring, and maintenance of access roads, hunt facilities, and signs. Material costs include permit printing, portable restroom rental, and check station operational costs.

ANTICIPATED IMPACTS OF THE USE: Hunting opportunities would result in an average deer harvest of 95 individuals annually, based on reported harvest data during the last five years. This level of harvest continues to maintain white-tailed deer populations at sustainable levels on the Refuge. Hunting is also conducted to reduce exotic wildlife. Based on five-year harvest data, an average harvest of 28 feral hogs and 10 nilgai antelope are taken annually. Refuge operations and public uses such as wildlife observation and photography are restricted to minimize conflicts on those Refuge management units open to hunting during the regular hunt periods (i.e., December and January).

Anticipated levels and duration of hunting disturbance are considered minimal and are well within the tolerance level of wildlife species and populations present on the Refuge. All hunting activities would be conducted within the constraints of sound biological principles and Refuge-specific hunting regulations (e.g., to regulate harvest and to ensure hunter safety). Monitoring activities through wildlife inventories and assessments of public use levels and activities would be used, and public use programs would be adjusted as needed to limit disturbance. An effective law enforcement program and site-specific Refuge regulations that are reviewed annually should minimize most unauthorized activity and incidental take issues.

With respect to federally-listed species such as the ocelot and jaguarundi, radio-telemetry monitoring of collared ocelots indicates that these public hunts do not adversely affect radio-collared ocelots. Hunters avoid entering the dense brush areas where these cats occur but do hunt adjacent to these areas. Aplomado falcons have been established on the Refuge and are frequently seen in the more open grassland areas. Radio-telemetry monitoring of released aplomado falcons indicates that these public hunts do not adversely affect the aplomado falcons that have been fitted with radio transmitters.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

___X_ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. All hunts would be by permit only.

2. Hunting rules and regulations would be enforced by U.S. Fish and Wildlife Service refuge officers and Texas Parks and Wildlife Department law enforcement officers. State hunting regulations apply (but may be more restrictive in the Refuge permit).
3. For any new areas and types of hunts, a Public Hunt Opening Package, as required by 50 CFR Part 32.1 and an Intra-Service Section 7 evaluation, would be conducted.
4. Hunting would be conducted only in specially-designated areas and during specific time periods to reduce conflicts with other wildlife-dependent recreational uses (e.g., wildlife observation, photography) and Refuge operations.

JUSTIFICATION: The Refuge hunting program provides affordable and accessible public hunting opportunities that are very limited in south Texas. Hunting is an important wildlife management tool to control populations of some species that might otherwise exceed the carrying capacity of their habitat and threaten the well-being of other wildlife species, and in some instances, that of human health and safety. Exotics negatively affect native wildlife through competition for limited resources, predation, and damage to habitat.

With these stipulations in place, hunting is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Invasive and Exotic Plant Management

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

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DESCRIPTION OF USE: This involves the management of exotic and/or invasive plants that occur on the Refuge. Treatment methods may include mechanical clearing, chemical applications, prescribed burning, biological control, or combinations of these, depending on the particular species. Bermuda grass (*Cynodon dactylon*), guineagrass (*Panicum maximum*), buffelgrass (Pennisetum ciliare), Brazilian peppertree (*Schinus terebinthifolius*), and saltcedar (*Tamarix aphylla*) are of particular concern on Laguna Atascosa NWR. The Refuge has conducted limited control of buffelgrass and other invasive plants along roads and trails. Saltcedar has been mechanically controlled on Refuge levees and dikes. Cattails *(Typha domingensis)* have been controlled with prescribed fire. Prescribed fire is used as a tool to control invasive or exotic species and enhance or maintain important habitats such as the coastal prairie and savannah (e.g., Gulf cordgrass). During the next 10–15 years, the goal is to reduce, by more than 50 percent, all invasive species on the Refuge and to continue these control efforts, as necessary. Specific proposed actions are to:

1. develop and implement an integrated pest management plan to address Refuge habitat needs and comply with Federal mandates;
2. monitor for and map other invasive and/or exotic species as indicated by an integrated pest management plan;
3. control guinea grass, buffelgrass, and other exotic grasses on the Refuge with particular focus on the lila de las lomas and Lila de los llanos plant communities on the lomas;

4. control Brazilian peppertree stands on the Refuge through mechanical and chemical treatments;
5. remove saltcedar and replant corridor with native brush used by ocelots on the Sendero del Gato Tract (formerly known as the Schatz Tract); and
6. control saltcedar stands through mechanical and chemical treatments on the Refuge.

AVAILABILITY OF RESOURCES: Staff and funding are available for conducting invasive and exotic plant control, although there are often competing priorities. Environmentally-friendly, Service approved herbicides used for invasive and exotic plants are expensive. Staff, interns, volunteers, and contract laborers provided by cooperative farmers address exotic and invasive plant control needs. Cooperative farmers provide chemicals and laborers to treat infested fields as part of their in-kind services under their farming agreement. The majority of expenses for spraying herbicides and mowing of exotic plants will be directly or indirectly incurred by the Refuge. Farmers compensate the Refuge annually in exchange for access to Refuge farmlands, which will eventually be replanted to native plants. In exchange for farming Refuge land, cooperative farmers control exotic and invasive plants as directed by the Refuge. These activities are managed through contracts between the Service Farming Officer and the farmer.

ANTICIPATED IMPACTS OF THE USE:

Soil and Water Resources: Managing exotic and invasive plants should not have any negative impacts on soil or water resources on the Refuge, provided that herbicides used are selected carefully and applied appropriately, using the smallest amount of active ingredient per acre. Chemical applications for exotic and invasive grasses and woody plants will be conducted in a manner using species-specific approved chemicals. No chemical applications will be made in or near wetlands, ponds, or the river, except for those chemicals approved for application in or near water.

Threatened and Endangered Species: The control and removal of invasive and exotic plant species from the Refuge is not expected to have any negative impacts on threatened or endangered species, particularly the ocelot or jaguarundi.

Habitat: Management of invasive and exotic plants is not expected to have any negative impacts on habitat. However, there are significant benefits to native habitat by conducting exotic and invasive plant management actions. In fact, the Refuge has found that removal of exotic grasses allows for improved re-establishment of native grasses, forbs, and woody plants.

Wildlife-dependent Recreational Uses: Laguna Atascosa NWR provides ample opportunity for public visitation. By allowing for the management of invasive and exotic plants, the Refuge will provide the public a better opportunity to view native south Texas habitat, rather than impaired habitat that is impacted by invasive and exotic species. The proposed exotic and invasive plant removal actions will improve the condition of Refuge lands and provide the public with an opportunity to experience some of the best representative samples of native habitat that remain in the Rio Grande Valley.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Only approved exotic and invasive species management methods would be strategically planned and executed by Refuge staff.
2. Non-Service management efforts would be coordinated and approved through Refuge staff.
3. Consultation with U.S. Fish and Wildlife Service Ecological Services would be conducted for exotic and invasive species management efforts.

JUSTIFICATION: The spread or introduction of exotic and invasive plant species is an ongoing and serious threat to native habitats. Service policy requires that Federal agencies use relevant programs, authorities, and funds to monitor for, prevent, and control the spread of invasive and exotic species. The spread of invasive grasses threatens the biodiversity of rare plant communities and endangered species habitats on the Refuge such as the coastal grasslands, lomas, or brush thickets. Exotic and invasive plant control and/or removal is a necessary action to improve the integrity of the south Texas ecosystem. With these stipulations in place, invasive and exotic plant species management is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Invasive and Exotic Wildlife Management

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: Conduct surveys for exotic or invasive wildlife species (e.g., feral hogs, nilgai antelope) as needed, and improve management efforts by developing and implementing specific plans for these species.

Exotic animal management for hoofed ungulates is achieved with the help of the public during our annual big game hunts (i.e., nilgai antelope and feral hogs); by management actions conducted by the refuge staff; with the assistance of other agencies; and by members of the public operating under a Special Use Permit. The nilgai antelope (*Boselaphus tragocamelus*) was the first known exotic ungulate released in Texas. In 1988, it was estimated that 36,756 nilgai were present in the state, including those that had escaped the private ranches. Nilgai now have viable free-ranging populations in Kennedy, Willacy, Cameron, Hidalgo, and northern Starr counties in south Texas.

Exotic animals are removed using firearms, archery equipment, and trapping. Every effort is made to contact landowners of any introduced ungulates and free-ranging domestic animals prior to conducting removal and/or control actions.

Exotic insect pest control is conducted annually by other government agencies that monitor the impacts of several pests on the agricultural and farming industry. The standard means of capturing target invasive insects is with the aid of phermone traps. Pest insect species include the Mediterranean fruit fly, sweet potato whitefly, boll weevil, red-imported fire ants, and Africanized honey bees. The control of exotic insects is beneficial to the Refuge's efforts to maintain and improve the biological integrity of the south Texas ecosystem.

AVAILABILITY OF RESOURCES: Staff and funding are available for conducting most of these exotic and invasive animal management activities, although there are often competing priorities. Costs for exotic animal management are incurred by the Refuge through the staff time and administration required to handle and issue Special Use Permits to private individuals and other agencies, and through trapping and removal efforts conducted in-house by Refuge staff.

ANTICIPATED IMPACTS OF THE USE:

Soil and Water Resources: Managing exotic animals should not have any negative impacts on soil or water resources on the Refuge. Harvested ungulates will be removed from the Refuge and utilized for human consumption whenever feasible. Whenever possible, harvested animals will be donated to a local food bank, church, or other appropriate outlet to provide food for the needy. As a last resort and in some cases, harvested animals or inedible portions of those animals will be buried on-site. Therefore, soils or waters of the State or on the Refuge will not be affected by harvested exotic animals.

Threatened and Endangered Species: Managing exotic animals is not expected to have any negative impacts on threatened or endangered species, particularly the ocelot or jaguarundi. Management of feral hogs and nilgai antelope will improve native habitat quality by allowing brush species to grow into more dense stands, which is significantly more suitable for ocelot. Nilgai and feral hogs can create trails and wallows that impact native habitat, create conditions for increased fleas and ticks, and otherwise compete with native wildlife and threatened and endangered species for food, water, and space.

Habitat: Management of exotic animals is not expected to have any negative impacts on habitat. However, there are significant benefits to native habitat by conducting exotic animal management actions. Removal of exotic animals reduces competition for limited resources (food, water, cover) with native species.

Activities that involve monitoring and removal of exotic insect pests are not expected to have any negative impacts on native plants or animals on the Refuge. The monitoring activities may have long-term beneficial effects for native wildlife and plants by providing data on direct or indirect competition, dispersal, biological control techniques, and other important factors relating to exotic insect pest species. Exotic pest control is a necessary action to preserve the integrity of the agricultural industry of south Texas and elsewhere.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Only approved exotic and invasive species management methods would be used by Refuge staff and in execution of their assigned duties.

2. Non-Service management efforts would be by special use or Refuge hunt permit only.

3. Consultation with U.S. Fish and Wildlife Service Ecological Services would be conducted for exotic and invasive species management efforts.

JUSTIFICATION: There are several exotic and invasive wildlife species occurring on Laguna Atascosa NWR that damage native habitats or compete with native wildlife for resources. Nilgai antelope, a native of India and Pakistan, are an exotic species on the Refuge. Their populations have increased recently, and they compete with native species such as white-tailed deer for food. Feral hogs, an invasive species found on the Refuge, damage fragile wetland resources and are predators to native wildlife. Both of these species require aggressive and continuing control efforts. However, there are other invasive or exotic wildlife species (e.g., Norway rats, roof rats, and Africanized honey bees) that may compete with native wildlife for food or impact native habitats. With these stipulations in place, invasive and exotic wildlife species management is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Picnicking

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: Picnicking occurs on the Refuge at a small picnic site located near the Visitor Center. Picnic tables and trash collection facilities are provided.

AVAILABILITY OF RESOURCES: Staff and funding are available for conducting management and maintenance activities related to picnicking at its current level.

ANTICIPATED IMPACTS OF THE USE: Picnicking has the potential to cause temporary disturbance to wildlife using the area where picnicking would occur by concentrating people at a site. Litter is typically a concern associated with picnicking, as discarded beverage containers, bags, and food remains are often left behind.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X_ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Picnicking would be limited to daylight hours only.
2. Picnicking would be allowed only on specially-designated areas.

JUSTIFICATION: Refuge visitors spend multiple hours on-site participating in priority wildlife-dependent uses. A designated picnic area facilitates their ability to stay many hours by providing an area to rest and eat while enjoying their natural surroundings.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Recreational Fishing

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: Fishing opportunities on the Refuge are currently available at Adolph Thomae Jr. County Park (Laguna Atascosa Unit), along the Gulf beaches (South Padre Island Unit), and at San Martín Lake (Bahia Grande Unit). Boating and fishing is available along the Harlingen Ship Channel at Adolph Thomae Jr. County Park and at San Martín Lake, which are both situated within the Refuge boundary. About 70 percent of the park's visitation is for saltwater fishing access to the Laguna Madre. The park includes facilities such as fishing piers, picnic sites, overnight camping sites, restrooms, a boat ramp, and parking areas. A public boat ramp is also located along State Highway (SH) 48, which provides access to the Brownsville Ship Channel and San Martín Lake. Fishing also occurs on the South Padre Island Unit, where anglers either fish on the beach and bay fronts, or on the rock jetties at the Mansfield Channel. Freshwater fishing on the Laguna Atascosa Unit is not allowed due to high contaminant levels in the fishery resource. The rest of the Refuge is not currently open to fishing.

The Refuge is proposing to annually evaluate the fishing program on the Refuge to enhance fishing access and opportunities for a safe, quality fishing experience for diverse audiences and to expand fishing opportunities over current levels, when compatible, by 2015. This includes the development of a fishing plan, as a chapter of the Visitor Services Plan, by 2011.

In addition, the Refuge is proposing new fishing opportunities as follows: 1) seasonal wade-fishing access to the Laguna Madre from the Bayside Wildlife Drive in Management Unit 7, including any additional infrastructure (e.g., parking areas and access points); and 2) wade-fishing and non-motorized watercraft (e.g., canoe and kayak) on the Bahia Grande off SH 48, including the addition of parking areas and a fishing and boat access pier.

AVAILABILITY OF RESOURCES: The main Refuge costs to manage existing and proposed uses are for law enforcement, litter clean-up, signage, and facility maintenance. Resources to manage this use are marginal at best, given the size of the Refuge and the number of users. Refuge law enforcement staff are shared between the three refuges in the South Texas Refuge Complex, which limits the amount of staff time that can be spent managing this use. Texas Parks and Wildlife Department law enforcement personnel would assist with enforcing fishing regulations. County personnel would assist with litter clean-up at Bahia Grande and South Padre Island Unit fishing access sites. Although not optimum, funding and staffing are available to allow this use at current and proposed levels. Strategies in the Comprehensive Conservation Plan call for additional staffing, funding, signage, facilities, and partnerships, which would help to manage this use.

ANTICIPATED IMPACTS OF THE USE: Recreational fishing has the potential to cause temporary disturbance to waterbirds, waterfowl, and other wildlife using the open water and shorelines where fishing would occur. Bank-fishing has the potential to affect vegetation, as anglers trample vegetation to access or fish along the shoreline. Litter is typically a concern associated with bank-fishing, as discarded fishing line, bait containers, etc., are often found in fishing areas. Wade-fishing may affect seagrasses. Use of motorized vehicles to access beach and bay fishing sites would disturb wildlife and affect habitat.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Wade-fishing would be conducted only in specially-designated areas and during specific time periods to reduce conflicts with other wildlife-dependent recreational uses (e.g., wildlife observation, photography) and Refuge operations.
2. Fishing access to the Bahia Grande and San Martín Lake would be limited to designated sites along SH 48.
3. Fishing access would be limited to daylight hours only.
4. Fishing access to the bay side of the South Padre Island Unit would be along designated access routes for motorized vehicles at traditional access locations (e.g., washovers) from the public beach.
5. Unimproved parking areas on the bay side of the South Padre Island Unit would be used by anglers.

JUSTIFICATION: Fishing is a top wildlife-dependent use enjoyed by many local residents on the Refuge. Fishing is an appropriate use of the Refuge System; however, the Refuge manager must still determine if and where fishing is compatible on the Refuge. It is also considered a priority general public use of the Refuge System and will receive enhanced consideration over non-priority uses. Fishing programs can promote understanding and appreciation of natural resources and their management on lands and waters in the Refuge

System. With these stipulations in place, recreational fishing is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Scientific Research

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) "*...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) "*...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: Research activities are undertaken on the Refuge to better understand the dynamics of ecological processes, climatic trends, and sensitive wildlife needs (e.g., Federal trust resources), and to guide management actions. Appropriate research and partnerships are implemented on a continuing basis to fill many of these informational gaps. The Refuge also participates in cooperative conservation projects that occur on private lands such as USDA's SAFE initiative, which protects or establishes travel corridors for endangered ocelots. During the next 10–15 years, the Refuge proposes to:

1. work with Mexican researchers and academia with mapping genetic diversity in ocelot populations in Mexico to help implement priority task items of the ocelot recovery plan;

2. coordinate, provide technical support, participate in routine ocelot conservation workshops (every 3–5 years), share information, and collaborate with research partners and colleagues to support or conduct research related to radio-telemetry, automatic camera stations, hair snares, genetic monitoring, disease monitoring, and other research on ocelot populations in the Texas–Tamaulipas Management Unit (ocelot conservation);

3. coordinate, provide technical support, and share information with research partners and colleagues working in the Arizona–Sonora Management Unit (ocelot conservation) to support implementation of recovery actions in that area;

4. coordinate, provide technical support, and share information with research partners and colleagues throughout the remainder of areas of ocelot occurrence (e.g., southern Mexico, Central and South America) to support ocelot recovery efforts;

5. collect and analyze eggshell fragments at least every 2–3 years (in partnership with academia or researchers) for potential pesticide contamination in resident aplomado falcon populations, particularly nesting territories within or near farm fields;

6. annually establish at least three research projects in partnership with universities, other institutions, and other agencies (e.g., U.S. Geological Survey) for the protection and management of Federal trust species, and priority and focal species (e.g., marine or fishery surveys) in response to seagrass restoration and wildlife species diversity changes in response to loma restoration in the Bahia Grande Unit;

7. work with the Regional Biologist to address region-wide issues and priorities relevant to or potentially affecting Laguna's wildlife management activities such as research needs, overall conservation issues, and regional mandates or policies related to wildlife management;

8. encourage research with universities and other research partners that will contribute to the biological database of the Refuge or contribute to habitat restoration or management of Federal trust species and priority species;

9. identify information gaps regarding distribution and abundance of flora and fauna, particularly on Bahia Grande and South Padre Island units; and

10. develop a field research station at Bahia Grande through partnerships (e.g., local universities).

AVAILABILITY OF RESOURCES: Existing Refuge staff currently issue Special Use Permits (SUPs) for research projects that occur solely on the Refuge. South Texas Refuge Complex staff issue SUPs for research activities that occur on more than one of the three refuges within the STRC. Staff resources are deemed adequate to manage this use at the anticipated use levels.

Miscellaneous equipment and limited logistical support are available on the Refuge. Occasionally, temporary housing is also available for use by researchers while studying Refuge resources.

ANTICIPATED IMPACTS OF THE USE: Research activities may disturb fish, wildlife, and their habitats. Efforts to capture animals can cause disturbance, injury, or death to groups of wildlife or individuals. High summer temperatures and humidity must be taken into consideration and established protocols followed when live trapping mammals and mist netting birds. To wildlife, the energy cost of disturbance may be appreciable in terms of disruption of feeding, displacement from preferred habitat, and the added energy expended to avoid disturbance.

Sampling activities can cause compaction of soil and the trampling of vegetation, establishment of temporary trails through vegetation beds, and disruption of bottom sediments. The removal of vegetation or sediments by core sampling methods can cause increased localized turbidity and disrupt non-target plants and animals.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Researcher investigations would be conducted by Special Use Permit only.
2. Only research that contributes to Refuge purposes or the mission of the Refuge Sysem, and does not cause unreasonable resource disturbance or harm, would be allowed.
3. Annual status reports and a final report concerning scientific research activities would be completed by permittee and provided to the Refuge manager.

JUSTIFICATION: There is a continuing need for research and investigation for the conservation of Federal trust and focal species that occur on Laguna Atascosa NWR (e.g., ocelot, aplomado falcon, Kemp's ridley sea turtle, waterfowl, and shorebirds). Many research needs, if undertaken, would support Refuge conservation and management efforts, as well as implement recovery plan action items. Some of these research needs are to meet the objectives found in various plans and Federal mandates. Priority will be given to research projects that can be applied to current wildlife management or conservation issues. Research activities will be reviewed periodically by the Service and other representatives to evaluate results. With these stipulations in place, scientific research activities are not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Virtual Geocaching

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) "*...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) "*...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude...",* Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: Geocaching is played throughout the world by adventure seekers equipped with GPS (global positioning system) devices. The basic idea is to locate outdoor geocaches by their coordinates and share your experiences online. Virtual geocaching is the search for destinations or locations and does not involve a hidden container or other such item. The Refuge proposes utililizing virtual geocaching as a method of encouraging Refuge visitation and participation in priority wildlife-dependent recreational uses (e.g., wildlife observation, photography) by establishing Refuge Web site virtual geocache links and by providing Refuge virtual geocaching links to recognized, reputable geocaching Web sites.

AVAILABILITY OF RESOURCES: Direct costs to administer a virtual geocaching program would be in the form of staff time and training. Additional staffing and funding are available to adequately oversee and administer this new use.

ANTICIPATED IMPACTS OF THE USE: Human activity may disturb wildlife utilizing the Refuge's habitats for feeding or nesting. Off-trail human activity can potentially lead to soil compaction and vegetation trampling. Litter discarded by visitors can entangle wildlife or be ingested, resulting in injury or death.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Only virtual geocaching would be allowed.
2. Virtual geocache sites would be accessible only via existing Refuge roads and trails.
3. Virtual geocaching would be limited to daylight hours only.

JUSTIFICATION: This use would facilitate Refuge visitation and priority wildlife-dependent uses (e.g., fishing, wildlife observation). With these stipulations in place, virtual geocaching is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Wildlife Disease Control

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES): Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: The Refuge will respond to disease outbreaks, or the potential for outbreaks, using Refuge staff and resources, or in coordination with other agencies and organizations as appropriate. Disease control conducted by non-Service staff will be permitted on a case-by-case basis under a Special Use Permit if it is considered appropriate, compatible, and in compliance with Service policy. Disease outbreaks with a compelling case of potential for harm to the public or to trust resources will be dealt with promptly. Dead and/or infected animals will be removed from the Refuge, when feasible, and disposed of properly. Vectors such as mosquitos, ticks, etc., will be reduced or removed in accordance with established policy.

AVAILABILITY OF RESOURCES: Existing Refuge staff currently issue Special Use Permits (SUPs) for wildlife disease control activities that occur solely on Laguna Atascosa National Wildlife Refuge. South Texas Refuge Complex staff issue SUPs for wildlife disease control activities that occur on more than one of the three refuges within the STRC. Staff resources are deemed adequate to manage this use at the anticipated use levels. In the event of large scale, catastrophic wildlife disease outbreak, additional funding, staffing, and other resources would be requested from the Regional Office.

ANTICIPATED IMPACTS OF THE USE: Wildlife disease control and clean-up activities following a disease outbreak most likely will disturb other, non-target fish, wildlife, and their habitats, as well as the affected species. Disturbance due to periodic sampling for disease vectors or other disease indicators is expected to be minimal and would be limited by special conditions within the responsible party's SUP.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Non-Service wildlife disease control activities on the Refuge would be conducted by Special Use Permit only.
2. Only wildlife disease control activities that contribute to the purposes of the Refuge and/or the mission of the National Wildlife Refuge System, that do not cause undo resource disturbance or harm, or that meet the requirements of the Refuge Wildlife Disease Control plan or agency policy would be allowed.
3. Annual status reports and a final report concerning wildlife disease control monitoring activities would be completed by permittee and provided to the Refuge manager.

JUSTIFICATION: Many wildlife disease control activities are to meet objectives found in various plans and Federal mandates. With these stipulations in place, wildlife disease control activities are not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Wildlife Observation

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES): Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: Wildlife observation is one of the six wildlife-dependent priority uses identified in the National Wildlife Refuge System Improvement Act of 1997. The Refuge is open for wildlife observation all year from sunrise to sunset. Foot travel is allowed on Refuge roads and trails. Motorized vehicles are restricted to the two tour roads, with most of the use occurring on Bayside Drive. Bicycling on designated bike trails and boating on state navigable waters are methods of facilitating wildlife observation on Refuge. The Refuge proposes to construct additional, universally accessible trails, photo blinds, and viewing platforms, as well as improve existing roads and parking areas as needed to further wildlife observation opportunities.

AVAILABILITY OF RESOURCES: Current staffing levels provide minimal staff oversight of the program and maintenance of the necessary visitor services facilities. To increase and enhance wildlife observation opportunities on the Refuge, additional staff are needed. The additional staffing needs are outlined in the CCP.

ANTICIPATED IMPACTS OF THE USE: Wildlife observation activity may temporarily disturb or displace wildlife. Off-trail human activity can potentially lead to soil compaction and vegetation trampling. The construction and maintenance of trails, boardwalks, and viewing platforms may affect soils, vegetation, and in some instances, hydrology around the facilities. Litter discarded by visitors can entangle wildlife or be ingested, resulting in injury or death. Some animals are killed or injured by vehicles while crossing Refuge roads.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

1. Wildlife observation activities would be limited to daylight hours or by special use permit.
2. Wildlife observation would be conducted only in specially-designated areas.
3. Only designated public trails and roads would be used to facilitate wildlife observation.

JUSTIFICATION: The National Wildlife Refuge System Improvement Act of 1997 identifies wildlife observation as a priority wildlife-dependent use. Expanding existing wildlife observation opportunities on the Refuge would allow visitors to experience, enjoy, and learn about native wildlife and plant species found in the Lower Rio Grande Valley of south Texas. Many of our visitors come to the Refuge to see wildlife, particularly migratory bird species that cannot be seen anywhere else in the United States. With these stipulations in place, wildlife observation is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

DRAFT COMPATIBILITY DETERMINATION

USE: Wildlife Photography, Videography, or Film-making

REFUGE NAME: Laguna Atascosa National Wildlife Refuge

ESTABLISHING and ACQUISITION AUTHORITY(IES): Migratory Bird Conservation Act of 1929; Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948; and the Fish and Wildlife Act of 1956.

REFUGE PURPOSE(s): 1) *"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"* Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d), as amended; 2) *"...for wildlife conservation purposes if the real property has particular value in carrying out the national migratory bird management program..."* Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-667d), Public Law 80-537, as amended; and 3) *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)(4), as amended, and *"...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."*, Fish and Wildlife Act of 1956 (16 U.S.C. 742(b)(1), as amended.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION: To administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE: Amateur and commercial photography and filming are considered a priority public use on our national wildlife refuges. In particular, photography and filming conducted for educational purposes to show and describe the flora and fauna of the Lower Rio Grande Valley, its landscapes, and its natural diversity and scenic value; to promote wildlife-dependent recreation; to increase the basic knowledge and understanding of the U.S. Fish and Wildlife Service; and/or to further describe current and past management actions, through which the public may gain a greater appreciation or understanding for the natural diversity of south Texas, particularly the fish, wildlife and habitat, and the conservation of those species, is consistent with the purpose and mission of the refuge. Requests by photographers to conduct commercial photography and filming, resulting in educational and/or informational products on Refuge property, will continue to be evaluated and approved on a case-by-case basis by the Refuge manager. Individual proposals will be evaluated for their cumulative impact to the environment, disturbance to plants and wildlife, and overall benefits to the public. The Refuge will assess the benefits and/or detriments of each individual commercial photography or filming request. When the proposal includes generating a product that contributes to an improved or increased understanding of our agency or the local species, or further promotes priority public uses on refuges, the Refuge will take those factors into strong consideration.

Amateur photography consists of untrained public who simply purchased a camera and take pictures for personal use only, to document species they observe or scenery they enjoy, or to document their experience on the Refuge. Amateur photography is a priority public use and is therefore promoted. Foot travel is allowed on Refuge roads and trails by photographers and other Refuge visitors. Motorized vehicles are restricted to two tour roads, with most of the use

occurring on the Bayside Drive. Some Special Use Permits are issued on occasion to individuals for photography purposes in areas normally closed to vehicle traffic by the public.

AVAILABILITY OF RESOURCES: In the past, filming and/or photography on the Refuge has resulted in the publishing of a number of excellent magazine articles, news stories, and documentaries on the history of the native flora and fauna and cultural resources of the Valley. The Refuge manager reviews each request on a case-by-case basis to issue a Special Use Permit. The cost to the Refuge to administer these requests, based on their current frequency and ultimate value, is negligible. Furthermore, it is an important aspect of our responsibility to promote the Refuge; by allowing or permitting commercial photography, we have our best opportunity to reach the biggest audience.

ANTICIPATED IMPACTS OF THE USE: Minimal or no adverse short-term or long-term impacts are anticipated to Service lands, waters, or interests, provided that permittees adhere to the standard operating procedures and any special terms and conditions that are attached to their Special Use Permit. Beneficial impacts, on the other hand, are expected to result from the dissemination of photographs and/or filming on Refuge to the public. The public will have an opportunity to increase their awareness and understanding about the natural resources of south Texas. In addition, there is an opportunity for the public to increase their understanding about the U.S. Fish and Wildlife Service and purposes for which the Refuge was established in south Texas.

PUBLIC REVIEW and COMMENT: Public comments on this draft determination will be received as part of the Comprehensive Conservation Plan for Laguna Atascosa NWR.

DETERMINATION (check one below)

_____ USE IS NOT COMPATIBLE

__X__ USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY: A Special Use Permit will be required for all commercial filming and/or photography on Refuge. Each permittee will be required to adhere to all general operating procedures and any special terms and conditions made a part of the permit. Special conditions to be stipulated in the permit may include but will not be limited to:

1. No staging of wildlife or habitat.
2. No construction of blinds (portable or pre-constructed blinds allowed only).
3. All proposed activities and time frames must be specified in writing.
4. Exact location of sensitive resources, such as threatened and endangered species, nesting birds, cultural resources, etc., must not be disclosed to the public.
5. Filming and/or photography will be for educational and/or informational uses only.

JUSTIFICATION: Refuge visitors come to observe and photograph flora, fauna, and landscapes on the Refuge. Wildlife photography is one of the priority public uses of the Refuge System and is to be encouraged when possible. With these stipulations in place, wildlife photography, videography, or film-making is not likely to materially interfere with or detract from the purposes of the Refuge.

SIGNATURE: Refuge Manager _____

(Signature and Date)

CONCURRENCE: Regional Chief _____

(Signature and Date)

Mandatory 10- or 15-year
Re-evaluation Date: _____

E. Refuge Establishing Documents

SECRETARY OF THE INTERIOR, CHAIRMAN
SECRETARY OF AGRICULTURE
SECRETARY OF COMMERCE
GEORGE L. RADCLIFFE, SENATOR FROM MARYLAND
C. WAYLAND BROOKS, SENATOR FROM ILLINOIS
JOHN J. COCHRAN, REPRESENTATIVE FROM MISSOURI
WALTER G. SMITH, REPRESENTATIVE FROM OHIO
RUDOLPH DIEFFENBACH, SECRETARY

OFFICE: DEPARTMENT OF THE INTERIOR

MIGRATORY BIRD CONSERVATION COMMISSION
WASHINGTON

October 12, 1945.

Mr. H. D. Dodgen, Executive Secretary,
Game, Fish, and Oyster Commission,
Austin, Texas.

Dear Mr. Dodgen:

The Fish and Wildlife Service, working under the provisions of the Migratory Bird Conservation Act (45 Stat. 1222), has reached price agreement for the purchase of approximately 11,275 acres of land within the limits of an approved migratory waterfowl refuge in Cameron County, Texas, the total area of which approximates 35,000 acres of land. This tract includes a portion of the Laguna Atascosa. The proposed purchase will be presented to the Migratory Bird Conservation Commission for consideration at a meeting scheduled to be held Wednesday, October 31, 1945, at 10:00 A.M. in the conference room of the Secretary of the Interior, as is provided for under the Migratory Bird Conservation Act.

That Act provides that: "The ranking officer of the branch or department of a State to which is committed the administration of its game laws, or his authorized representative, and in a State having no such branch or department, the governor thereof, or his authorized representative, shall be a member ex-officio of said commission for the purpose of considering and voting on all questions relating to the acquisition, under this Act, of areas in his State."

You are invited to attend this meeting to consider with other members of the Commission the proposed acquisition in your State. If you cannot attend, an appropriate letter on the project should be addressed to me in care of the Fish and Wildlife Service, Merchandise Mart, Chicago 54, Illinois.

It is advisable to tell you that, since Congress has made no appropriations for the expenses of the Migratory Bird Conservation Commission, there is no legal authority to make reimbursement for expenses incurred to attend the meeting.

Very truly yours,

Rudolph Dieffenbach

Secretary, Migratory Bird
Conservation Commission.

Copy for Regional Director Albuquerque

Price agreement for the first tract of land forming Laguna Atascosa NWR

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Regional Director - Albuquerque

DATE: October 31, 1945

FROM : Chief, Division of Lands

LA - TEXAS
Laguna Atascosa

SUBJECT: Approval of Project by Migratory Bird Conservation Commission

N.D. Rodgers

At the meeting of the Migratory Bird Conservation Commission held this morning, Representative Cochran a member of the Commission submitted a letter to Secretary Ickes from which I quote, as follows:

> "Congressman Milton H. West of Texas has likewise requested that he have an opportunity to contact some of his constituents in Cameron County, Texas, in regard to the establishment of the Wildlife Refuge to be known as Laguna Atascosa before the Commission approves the Project which is No. 4."

It is suggested that you take whatever steps are appropriate to see to it--insofar as you can do that--that Congressman West is properly advised regarding the program there and the importance of the proposed acquisition of the Continental Oil Company tract, as well as the importance of the waterfowl project in its entirety.

As a guide to you in the latter respect, we have limited our objectives to approximately 45,000 acres which would comprise the part best adapted for use by migratory waterfowl, which 45,000 acres embraces the 10,000 acres of War Department land which we hope eventually to obtain. The duck refuge would probably comprise all of the lands lying between the Continential Oil Company propery on the west up to and including the War Department lands.

Our present ideas are that we will treat the white-winged dove section as a separate unit--at least insofar as presentation of our proposed program to the Commission is concerned, and that will not be done until we have secured options on lands within it.

A copy of this letter is being sent to Dr. Saunders so that he may be fully advised as to what has happened.

Incidentally, up to this time we have not received a reply from the Executive Secretary of the Texas Commission to our request for his presence here or his favorable consideration of this proposed acquisition. You know that the Executive Secretary is an ex-officio member of the Migratory Bird Conservation Commission. It is highly important for us to have his approval and I think it might be a good idea for you to get in touch with him immediately to ascertain what he has done, if anything, and if he needs more advice about the project, please get it to him with the hope that we can obtain his approval.

Rudolph Diegenbach

Cc to Dr. Saunders

Memorandum approving the establishment of Laguna Atascosa NWR in 1945

FEDERAL REGISTER

Wednesday, January 26, 1949

WAR ASSETS ADMINISTRATION

[Wildlife Order 1]

TRANSFER OF 8,486 ACRES OF LAND AT HARLINGEN ARMY AIR FIELD (LAGUNA MADRE SUB-BASE), CAMERON COUNTY, TEXAS, TO THE SECRETARY OF THE INTERIOR

1. Pursuant to the authority granted under the provisions of Public Law 537, 80th Congress, notice is hereby given that by letter of transfer from the War Assets Administrator, to the Secretary of the Interior, dated January 12, 1949, a portion of that property known as Laguna Madre Sub-Base, Harlingen Army Air Field, Cameron County, Texas, and more particularly described in such letter, has been transferred to the Secretary of the Interior.

2. The above described property is transferred to the Secretary of the Interior for migratory bird conservation purposes in accordance with the provisions of said Public Law 537.

JESS LARSON,
Administrator.

JANUARY 12, 1949.

[F. R. Doc. 49-640; Filed, Jan. 25, 1949; 9:54 a. m.]

Federal Register *notice transferring lands from the War Department to the Refuge in January 1949*

F. Key Legislation and Service Policies*

Administrative Procedure Act (1966; 5 U.S.C. 551-559, 701-706 and 801-808, as amended): Contains procedures that Federal agencies must follow, including public information, open meetings, and privacy of information requirements, and provisions for hearings, adjudications, rule making, and judicial and congressional review of Federal agency actions.

Agricultural Credit Act of 1987 (7 U.S.C. 5104; P.L. 100-233): Authorizes the Farmer's Home Administration (FmHA) to transfer land to any Federal or State agency for conservation purposes (e.g., the FmHA can transfer fee-title or assign interests in real estate to the U.S. Fish and Wildlife Service for the protection of floodplains, wetlands, and surrounding uplands).

American Indian Religious Freedom Act (1978): Directs agencies to consult with Native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Americans with Disabilities Act (1992): The Americans with Disabilities Act is the most comprehensive Federal civil-rights statute that prohibits discrimination on the basis of disability in employment, State and local government, public accommodations, commercial facilities, transportation, and telecommunications.

Antiquities Act of 1906 (16 U.S.C. 431-433): First United States law to provide general protection of cultural or natural resources. This act authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Archaeological and Historic Preservation Act (1974): Requires that Federal agencies provide for *"...the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of...any alteration of the terrain caused as a result of any Federal construction project of federally licensed activity or program."*

Archaeological Resources Protection Act of 1979, as amended (16 U.S.C. 470aa-470mm): The Archaeological Resources Protection Act (ARPA) was enacted *"...to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals."* The main focus of ARPA is on regulation of legitimate archaeological investigation on public lands and the enforcement of penalties against looting or vandalism of these resources. Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Appropriate Uses Policy (2006) Service Manual 603 FW1: Describes procedures for refuge managers to follow when deciding if uses are appropriate on a refuge. Appropriate uses are either proposed or existing uses on a refuge that meet at least one of the following four conditions:

1. the use is a wildlife-dependent recreational use as identified in the 1997 Improvement Act;
2. the use contributes to fulfilling the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Improvement Act was signed into law;
3. the use involves the take of fish and wildlife under State regulations; or
4. the use has been found to be appropriate as described further in the Appropriate Refuge Uses policy.

This policy applies to all proposed and existing uses in the National Wildlife Refuge System only where the Service has jurisdiction over the use. The policy does not apply in: 1) situations where reserved rights or legal mandates provide that the Service must allow the use, and 2) refuge management activities (e.g., fish and wildlife population or habitat management actions, including but not limited to prescribed burns, water level management, invasive species control, routine scientific monitoring, law enforcement activities, and maintenance of existing refuge facilities).

Architectural Barriers Act (1968): Requires federally-owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

Bald and Golden Eagles Protection of 1940 (16 U.S.C. 668-668d; 54 Statute 250), as amended: Provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds.

Biological Integrity, Diversity, and Environmental Health (2001) Service Manual 601 FW 3: As part of the comprehensive conservation planning process, this policy provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on refuges and associated ecosystems. It provides refuge managers with an evaluation process to analyze their refuge and recommend the best management direction to prevent further degradation of environmental conditions; and, where appropriate and in concert with refuge purposes and Refuge System mission, restore lost or severely degraded components.

Clean Air Act (1970; 42 U.S.C. 7401 et seq.), as amended: A comprehensive Federal law that regulates air emissions from area, stationary, and mobile sources. This law authorizes the U.S. Environmental Protection Agency to establish National Ambient Air Quality Standards to protect public health and the environment.

Clean Water Act (1977); Federal Water Pollution Control Act: This is the principal law that governs pollution of the Nation's surface waters. The Clean Water Act employs several regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. Section 404 of the Clean Water Act requires permits (issued by the U.S. Army Corps of

Engineers) for the discharge of dredged or fill material into waters of the United States, including wetlands.

Coastal Barrier Resources Act (1982; 16 U.S.C. 3501 et seq.), as amended: This Act (CBRA) designated various undeveloped coastal barrier islands, depicted by specific maps, for inclusion in the Coastal Barrier Resources System. Areas so designated were made ineligible for direct or indirect Federal financial assistance that might support development, including flood insurance, except for emergency life-saving activities. Exceptions for certain activities, such as fish and wildlife research, are provided, and National Wildlife Refuges and other otherwise protected areas are excluded from the System.

Compatibility Policy (2000) Service Manual 603 FW 2: Incorporates the compatibility provisions of the National Wildlife Refuge System Improvement Act of 1997, that amends the National Wildlife Refuge System Administration Act of 1966. The Compatibility Policy is for determining whether proposed and existing uses, which the Service has jurisdiction over and are occurring on national wildlife refuges, are compatible (i.e., will not detract from or materially interfere) with the purpose(s) of the refuge or with the Refuge System's mission. The policy is to ensure that the Service) administers proposed and existing national wildlife refuge uses according to laws, regulations, and policies concerning compatibility, and provide procedures for documentation and periodic review of existing refuge uses.

Comprehensive Conservation Plans (2000) Service Manual 602 FW 3: As required by the National Wildlife Refuge System Improvement Act of 1997, Comprehensive Conservation Plans (CCPs) describe the desired future conditions of a refuge and provide long-range guidance and management direction to achieve refuge purposes; help fulfill the Refuge System mission; maintain and, where appropriate, restore the ecological integrity; as well as meet other mandates. The purpose of developing the CCP is to provide the refuge manager with a 15-year management plan for the conservation of fish, wildlife, and plant resources and their related habitats, while providing opportunities for compatible wildlife-dependent recreational uses.

Convention Between the United States of America and the Mexican States for the Protection of Migratory Birds and Game Mammals, 1936 (50 Statute 1311).

Convention of Nature Protection and Wildlife Preservation in the Western Hemisphere, 1940 (56 Statute 1354).

Convention Between the United States and Great Britain (for Canada for the Protection of Migratory Birds). (39 Statute 1702; TS 628), as amended.

Convention on Wetlands of International Importance, Especially as Waterfowl Habitats (I.L.M. 11:963-976, September 1972, Ramsar Convention).

Cooperative Research and Training Units Act (1960; 16 U.S.C. 753a-753b), as amended: Authorizes the Secretary of the Interior to enter into cooperative agreements with colleges and universities, State fish and game agencies, and non-profit organizations for the purpose of developing adequate, coordinated, cooperative research and training programs for fish and wildlife resources.

Criminal Code Provisions of 1940 (18 U.S.C. 41), as amended: Provides for fines and penalties for the unlawful taking, disturbing, hunting, trapping, capturing of "*...any bird, fish, or wild animal of any kind whatever, or takes or destroys the eggs or nest of any such bird or fish, on any lands or waters which are set apart or reserved as sanctuaries, refuges or*

breeding grounds for such birds, fish, or animals under any law of the United States or willfully injures, molests, or destroys any property of the United States on any such lands or waters..."

Disaster Relief Act of 1974 (42 U.S.C. 5121 et seq.), as amended: Provides authority for Federal agencies to assist State and local governments during Presidentially-declared emergencies.

Economy Act (1932; 31 U.S.C. 1535): Provides authority for Federal agencies to order goods and services from other Federal agencies and to pay the actual costs of those goods and services. The act was passed to obtain economies of scale and eliminate overlapping activities of the Federal government.

Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3901-3932, as amended): The purpose of this act is to promote wetlands conservation for the public benefit and to help fulfill international obligations in various migratory bird treaties and conventions. The act authorizes the purchase of wetlands from Land and Water Conservation Fund monies. The act also requires the Secretary of the Interior to establish a National Wetlands Priority Conservation Plan, requires the states to include wetlands in their Comprehensive Outdoor Recreation Plans, and transfers funds from import duties on arms and ammunition to the Migratory Bird Conservation Fund.

Endangered Species Act of 1973, as amended: The main purposes of the Endangered Species Act are to: 1) provide a means whereby ecosystems of threatened and endangered species may be conserved; and 2) provide a program for the conservation of threatened and endangered species. The provisions of the Endangered Species Act include but are limited to land acquisition, cooperative programs with the states, and interagency cooperation (Section 7). Section 7(a)(1) directs Federal agencies to carry out programs for the conservation of threatened and endangered species.

Environmental Education Act of 1990 (20 U.S.C. 5501-5510): Established the Office of Environmental Education within the Environmental Protection Agency, to develop and administer a Federal environmental education program. The office is required to develop and support environmental programs in consultation with other Federal natural resource management agencies, including the U.S. Fish and Wildlife Service.

Executive Order 11514; Protection and Enhancement of Environmental Quality (1970): This directs that the *"...Federal Government shall provide leadership in protecting and enhancing the quality of the Nation's environment to sustain and enrich human life. Federal agencies shall initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals..."*

Executive Order 11593; Protection and Enhancement of the Cultural Environment (1971): Establishes policy that the Federal government shall provide leadership in preserving, restoring and maintaining the historic and cultural environment of the Nation. Federal agencies "...shall (1) administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations; (2) initiate measures necessary to direct their policies, plans, and programs in such a way that federally owned sites, structures, and objects of historical, architectural, or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the people; and (3), in consultation with the Advisory Council on Historic Preservation (16 U.S.C. 4701), institute

procedures to assure that Federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures and objects of historical, architectural, or archaeological significance."

Executive Order 11644; Use of off-road vehicles on the public lands (1972): Requires that the Service designate areas as open or closed to off-highway vehicles to protect refuge resources, promote safety, and minimize conflict among the various refuge users; monitor the effects of these uses once they are allowed; and amend or rescind any area designation as necessary based on the information gathered.

Executive Order 11987; Exotic organisms (1977): Executive agencies shall, to the extent permitted by law, restrict the introduction of exotic species into the natural ecosystems on lands and waters that they own, lease, or hold for purposes of administration; and shall encourage the states, local governments, and private citizens to prevent the introduction of exotic species into natural ecosystems of the United States.

Executive Order 11988; Floodplain Management (1977): This directs that each Federal agency *"...shall provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains..."* in carrying out its responsibilities.

Executive Order 11989; Off-Road Vehicles on Public Lands (1977): Requires the Service to close areas to off-highway vehicles when we determine that the use causes or will cause considerable adverse effects on the soil, vegetation, wildlife, habitat, or cultural or historic resources.

Executive Order 11990; Protection of Wetlands (1977): This directs that each Federal agency "...shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities..."

Executive Order 12962; Recreational Fisheries (1995): Federal agencies shall, to the extent permitted by law and where practicable, and in cooperation with states and tribes, improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities.

Executive Order 12996; Management and General Public Use of the National Wildlife Refuge System (1996): This spells out the mission of the National Wildlife Refuge System, along with establishing guiding principles to help insure the long-term enjoyment of the Refuge System for present and future generations. The order directs the Secretary of the Interior to recognize compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation as priority public uses of the Refuge System.

Executive Order 13007; Indian Sacred Sites (1996): Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Executive Order 13112; Invasive Species (1999): This order was established to address the growing ecological and economic damage caused by invasive species. Executive Order 13112 requires Federal agencies to: 1) identify actions that might affect the status of invasive species

and prevent introductions of invasive species; 2) not authorize, fund, or carry out actions likely to cause the introduction or spread of invasive species; 3) detect and respond rapidly to control invasive species populations; 4) monitor and conduct research on invasive species; 5) restore native species and habitat conditions in ecosystems that have been invaded; and 6) promote public education on invasive species.

Executive Order 13158; Marine Protected Areas (2000): directs protection of the significant natural and cultural resources within the marine environment for the benefit of present and future generations by strengthening and expanding the Nation's system of marine protected areas (MPAs). An MPA is any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein. The EO directs Federal agencies to work together with states, territories, tribes and non-governmental partners to develop and maintain an effective national system of MPAs in the United States and to accomplish a variety of related tasks working with public and private partners. The "marine environment" is defined as those areas of ocean and coastal waters, the Great Lakes and their connecting waters, and submerged lands thereunder, over which the United States exercises jurisdiction, consistent with international law.

Executive Order 13186; Responsibilities of Federal agencies to protect migratory birds (2001): Provides guidance for Service programs relative to the management and conservation of migratory birds. Its purpose is to minimize the potential adverse effects of migratory bird take, with the goal of striving to eliminate take, while implementing our mission. This guidance includes but is not limited to 1) integrating migratory bird conservation measures into our activities; 2) restoring and enhancing the habitat of migratory birds; 3) ensuring our actions and plans promote migratory bird conservation; 4) promoting inventory, monitoring, research, management studies, and information exchange related to migratory birds; 5) promoting education and outreach related to migratory birds; 6) identifying special migratory bird habitats; and 7) strengthening non-Federal partnerships to further bird conservation.

Executive Order 13443; Facilitation of Hunting Heritage and Wildlife Conservation (2007): Directs Federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

Farmland Protection Policy Act (7 U.S.C. 4201 et seq.): Requires Federal agencies to identify and take into account the adverse effects of their programs on the preservation of farmlands.

Federal Aid in Sport Fish Restoration Act (1950; 16 U.S.C. 777-777k), as amended: Commonly called the Dingell-Johnson Act or Wallop-Breaux Act, this provides Federal aid to the States for management and restoration of fish having "*...material value in connection with sport or recreation in the marine and/or fresh waters of the United States.*" In addition, amendments to the act provide funds to the States for aquatic education, wetlands restoration, boat safety, and clean vessel sanitation devices (pumpouts), and a non-trailerable boat program. Funds are derived from a 10-percent excise tax on certain items of sport fishing tackle, a 3-percent excise tax on fish finders and electric trolling motors, import duties on fishing tackle, yachts and pleasure craft, interest on the account, and a portion of motorboat fuel tax revenues and small engine fuel taxes. To participate in the Federal Aid in Sport Fish

Restoration program, States are required to agree to this law and pass laws for the conservation of fish, which include a prohibition against the diversion of license fees for any other purpose than the administration of the State fish department.

Federal Aid in Wildlife Restoration Act (1937; 16 U.S.C. 669-669i), as amended: Commonly called the Pittman-Robertson Act, this provides Federal aid to States for management and restoration of wildlife. Funds from an 11-percent excise tax on sporting arms and ammunition are appropriated to the Secretary of the Interior and apportioned to States on a formula basis for paying up to 75 percent of the cost-approved projects. Project activities include acquisition and improvement of wildlife habitat, introduction of wildlife into suitable habitat, research into wildlife problems, surveys and inventories of wildlife problems, acquisition and development of access facilities for public use, and hunter education programs, including construction and operation of public target ranges.

Federal Environmental Pesticide Control Act of 1972 (7 USC 136-136y), as amended: This established, under the Administrator of the Environmental Protection Agency (EPA), a program for controlling the sale, distribution, and application of pesticides through an administrative registration process. The amendments provided for classifying pesticides for "general" or "restricted" use. "Restricted" pesticides may only be applied by or under the direct supervision of a certified applicator. Amendments to this act also authorized experimental use permits and provided for administrative review of registered pesticides and for penalties for violations of the statute. States were authorized to regulate the sale or use of any pesticide within a state, provided that such regulation does not permit any sale or use prohibited by the act. The Federal Environmental Pesticide Control Act of 1972 amended the **1947 Federal Insecticide, Fungicide, and Rodenticide Act** (FIFRA). The 1947 statute (FIFRA), prohibited the sale or distribution of "*economic poisons*," provided for the registration of such materials, and authorized penalties for violation of the Act. The Endangered Species Act later amended FIFRA to define imminent hazard to include situations involving *unreasonable hazard to the survival of a species declared by the Secretary of the Interior to be endangered or threatened.*

Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2201 et seq.), as amended: This authorizes reimbursement to State and local fire services for costs incurred in firefighting on Federal property.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species, and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Federal Property and Administrative Services Act of 1949 (40 U.S.C. 471-535), as amended: Sets forth requirements for the management and disposal of government property, including excess property (property under the control of any Federal agency, but which it no longer needs) and surplus property (excess property not required for the needs of any Federal agency).

Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j, not including 742 d-l), as amended: This established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges. The policy emphasizes the commercial fishing industry but also with a direction to administer the act with regard to the inherent right of every citizen and resident to fish for pleasure, enjoyment, and betterment, and to maintain and increase public opportunities for recreational use of fish and wildlife resources. Among other things, the act directs a program of continuing research, extension, and information

services on fish and wildlife matters, both domestically and internationally. A 1974 amendment to the Fish and Wildlife Act of 1956 abolished the "Bureau of Sport Fisheries and Wildlife" and re-designated it as the "United States Fish and Wildlife Service"(Public Law 93-271). In 1978, the Fish and Wildlife Act was amended to allow the Service to accept donations of both real and personal property. In 1998, the Fish and Wildlife Act of 1956 was further amended to promote volunteer programs and community partnerships for the benefit of national wildlife refuges. This also required the Secretary of the Interior to develop refuge education programs to provide outdoor classroom opportunities for students to promote understanding of the National Wildlife Refuge System and to improve scientific literacy in conjunction with both formal and informal education programs.

Fish and Wildlife Conservation Act of 1980 ("Nongame Act")(16 U.S.C. 2901-2911), as amended: Authorizes financial and technical assistance to the States for the development, revision, and implementation of conservation plans and programs for nongame fish and wildlife. A 1988 amendment requires the Service to monitor and assess migratory nongame birds, determine the effects of environmental changes and human activities, identify those likely to be candidates for endangered species listing, identify appropriate actions, and report to Congress one year from enactment. It also requires the Service to report at five-year intervals on actions taken.

Fish and Wildlife Coordination Act (1934), as amended: Authorizes the Secretary of the Interior to assist Federal, State, and other agencies in development, protection, rearing, and stocking fish and wildlife on Federal lands and in studying effects of pollution on fish and wildlife. The act also requires consultation with the U.S. Fish and Wildlife Service and the wildlife agency of any State wherein the waters of any stream or other water body are proposed to be impounded, diverted, channelized or otherwise controlled or modified by any Federal agency or any private agency under Federal permit or license; with a view to preventing loss of, or damage to, wildlife resources in connection with such water resource projects. The act further authorizes Federal water resource agencies to acquire lands or interests in connection with water use projects specifically for mitigation and enhancement of fish and wildlife.

Fish and Wildlife Improvement Act of 1978 (16 U.S.C. 7421; 92 Stat. 3110), as amended: Authorizes the Secretary of the Interior and the Secretary of Commerce to establish, conduct, and assist with national training programs for State fish and wildlife law enforcement personnel. It also authorized funding for research and development of new or improved methods to support fish and wildlife law enforcement. The law provides authority to the Secretaries to enter into law enforcement cooperative agreements with State or other Federal agencies and authorizes the disposal of abandoned or forfeited items under the fish, wildlife, and plant jurisdictions of these Secretaries. It strengthens the law enforcement operational capability of the Service by authorizing the disbursement and use of funds to facilitate various types of investigative efforts.

Flood Control Act of 1944, as amended: This act, supplemented by other flood control acts and river and harbor acts, authorizes various U.S. Army Corps of Engineers water development projects. The Flood Control Act expressed Congressional intent to limit the authorization and construction of navigation, flood control, and other water projects to those having significant benefits for navigation and those that could be operated consistent with other river uses. This authorized the construction of numerous dams and modifications to

previously existing dams. Several provisions of this act impact the responsibilities of the Service under the **Fish and Wildlife Coordination Act**.

Food Security Act of 1985 "Farm Bill" (99 Stat. 1354), as amended by the Food, Agriculture, Conservation, and Trade Act of 1990: This contains several provisions that contribute to wetland conservation. The "Swampbuster" provisions stated that farmers who produce an agricultural commodity on wetlands converted after enactment are ineligible for most farmer program subsidies. Administration of the program in the Department of Agriculture (USDA), which is required to consult with the U.S. Fish and Wildlife Service on matters relating to wetland identification, determination of exemptions to the wetland conservation provisions, issuance of implementing regulations, mitigation, and restoration of values and functions on converted wetlands. This act also authorized the Secretary of Agriculture to grant or sell conservation easements, which may include wetlands, to State or local governments or private non-profit organizations for conservation purposes. In addition, the 1985 act also established a Conservation Reserve program, providing incentives to private landowners (e.g., farmers) to return farmland to permanent vegetative cover and for applying soil conservation prescriptions such as wildlife habitat development. The program was expanded in 1988 by regulation to make cropped wetlands eligible for the program, with the intended result of wetland restoration (i.e., The Wetland Reserve Program).

Freedom of Information Act (1966; 5 U.S.C. 552): Requires all Federal agencies to make available to the public, for inspection and copying, administrative staff manuals and staff instructions, official, published and unpublished policy statements, final orders deciding case adjudication, and other documents. Special exemptions have been reserved for nine categories of privileged material, including but not limited to confidential matters relating to national defense or foreign policy, law enforcement records, and trade or commercial secrets. The Act requires the party seeking the information to pay reasonable search and duplication costs.

Historic Sites, Buildings and Antiquities Act (16 U.S.C. 461-462, 464-467), as amended: Also known as the Historic Sites Act, this declared it a national policy to preserve historic sites and objects of national significance, including those located on refuges. It provided procedures for designation, acquisition, administration, and protection of such sites. Among other things, national historic and nltural Landmarks are designated under authority of this act. As of January, 1989, 31 national wildlife refuges contained such sites, including Laguna Atascosa NWR.

Lacey Act of 1900 (16 U.S.C. 701), as amended: Makes it unlawful to import, export, sell, acquire, or purchase fish, wildlife, or plants taken, possessed, transported, or sold: 1) in violation of U.S. or Indian law, or 2) in interstate or foreign commerce involving any fish, wildlife, or plants taken possessed or sold in violation of State or foreign law. The Lacey Act covers all fish and wildlife and their parts or products, and plants protected by the Convention on International Trade in Endangered Species and those protected by State law. Commercial guiding and outfitting are considered to be a sale under the provisions of the act. The act also includes prohibitions on the importation of wild vertebrates and other animals listed in the act or declared by the Secretary of the Interior to be injurious to man or agriculture, wildlife resources, or otherwise, except under certain circumstances and pursuant to regulations. The Lacey Act includes penalties and fines for violations involving imports or exports or violations of a commercial nature.

Land and Water Conservation Fund Act (1965): Authorizes the use of the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition. Section 7(a)(l) of this Act provides authority to use Land and Water Conservation Fund money for acquisition of refuge areas under paragraph (5) of section 7(a) of the Fish and Wildlife Act of 1956.

Migratory Bird Conservation Act (1929; 16 U.S.C. 715-715d, 715e, 715f-715r), as amended: This established a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds.

Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712), as amended: The Migratory Bird Treaty Act (MBTA) is one of the earliest Federal wildlife management laws enacted to protect migratory birds, which were rapidly declining from unregulated sport and commercial hunting. Specific provisions in the MBTA include the establishment of a Federal prohibition, unless permitted by regulations, to "*...pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention ...for the protection of migratory birds...or any part, nest, or egg of any such bird.*"

Migratory Bird Hunting and Conservation Stamp Act (1934; 16 U.S.C. 718-718j), as amended: Known as the "Duck Stamp Act," this requires each waterfowl hunter 16 years of age or older to possess a valid Federal hunting stamp. Receipts from the sale of the stamp are deposited in a special Treasury account known as the Migratory Bird Conservation Fund and are not subject to appropriations. Funds appropriated under the Wetlands Loan Act (16 U.S.C. 715k-3-715k-5), as amended, are merged with duck stamp receipts and provided to the Secretary of the Interior for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act (16 U.S.C. 715 et seq), as amended, and since August 1, 1958, for acquisition of "Waterfowl Production Areas."

National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347), as amended: The National Environmental Policy Act (NEPA) requires that all Federal agencies prepare detailed environmental impact statements for "every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. NEPA stipulates factors to be considered in environmental impact statements, and requires that Federal agencies employ an interdisciplinary approach in related decision-making and develop means to ensure that un-quantified environmental values are given appropriate consideration, along with economic and technical considerations.

National Historic Preservation Act of 1966 (16 U.S.C. 470-470b, 470c-470n), as amended: Provides for preservation of significant historical features (buildings, objects, and sites) through a grant-in-aid program to the States. It established a National Register of Historic Places and a program of matching grants under the existing National Trust for Historic Preservation (16 U.S.C. 468-468d). The act established an Advisory Council on Historic Preservation, which was made a permanent independent agency in 1976. That act also created the Historic Preservation Fund. Federal agencies are directed to take into account the effects of their actions on items or sites listed or eligible for listing in the National Register. As of January, 1989, 91 historic sites on national wildlife refuges have been placed on the National Register.

National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee. (Refuge Administration Act): Defines the National Wildlife Refuge System and authorizes the Secretary of the Interior to permit any use of a refuge provided such use is compatible with the purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); establishes a formal process for determining compatibility; establishes the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; and requires a comprehensive conservation plan for each refuge by the year 2012. This act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

National Wildlife Refuge System Improvement Act (1997): Sets the mission and administrative policy for all refuges in the National Wildlife Refuge System. Clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); establishes the responsibilities of the Secretary of the Interior for managing and protecting the system; and requires a comprehensive conservation plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

National **Wildlife Refuge System Volunteer and Community Partnership Enhancement Act (1998; 16 U.S.C. 742f):** The purposes of this Act are to: 1) encourage the use of volunteers to assist the Service in the management of refuges within the Refuge System; 2) facilitate partnerships between the Refuge System and non-Federal entities to promote public awareness of the resources of the Refuge System and public participation in the conservation of those resources; and 3) encourage donations and other contributions by persons and organizations to the Refuge System. The act helps develop public participation in programs that enhance our ability to increase awareness and understanding of the individual refuge and the Refuge System through the development, publication, or distribution of educational materials and products.

Native American Graves Protection and Repatriation Act (1990): Requires Federal agencies and museums to inventory, determine ownership of and repatriate cultural items under their control or possession.

North American Wetlands Conservation Act (1989; 16 U.S.C. 4401-4412), as amended: Provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on wetlands between Canada, the United States, and Mexico.

Protection Act (1922; 16 U.S.C. 594): Provides for the Secretary of the Interior to protect and preserve, from fire, disease, or the ravages of beetles or other insects, timber on the public lands owned by the United States.

Reciprocal Fire Protection Act of 1955 (42 U.S.C. 1856), as amended by the Wildfire Suppression Assistance Act of 1989 (102 Stat. 1615): Provides authority for Federal agencies to enter into mutual assistance agreements with foreign, State, and local governments for combating wildfires, and to provide emergency assistance when no agreement exists.

Refuge Recreation Act of 1962 (16 U.S.C. 460k-460k-4), as amended: Authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use, when such uses do not interfere with the area's primary purposes. The act provides for public use fees and permits, and penalties for violation of regulations. It also authorizes the acceptance of donations of funds and real and personal property to assist in carrying out its purposes. Amendments to the act authorize acquisition of lands and interests suitable for: 1) fish and wildlife-oriented recreation, 2) protection of natural resources, 3) conservation of endangered or threatened species, or 4) carrying out two or more of the mentioned purposes. Such lands were required to be adjacent to or within an existing conservation area. Acquisition was not permitted with "duck stamp" receipts for these purposes.

Refuge Revenue Sharing Act of 1935 (16 U.S.C. 715s), as amended: Provides for payments to county governments in lieu of taxes, using revenues derived from the sale of products from refuges. Revenues received from refuge products, such as animals, timber and minerals, or from leases or other privileges, are required to be deposited in a special Treasury account and net receipts distributed to counties. Remaining monies are required to be transferred to the Migratory Bird Conservation Fund for land acquisition under provisions of the Migratory Bird Conservation Act. The act was later amended to expand the revenue sharing system to include National Fish Hatcheries and Service research stations. It also included in the Refuge Revenue Sharing Fund receipts from the sale of salmonid carcasses. Payments to counties were established as: 1) on acquired land, the greatest amount calculated on the basis of 75 cents per acre, three-fourths of one percent of the appraised value, or 25 percent of the net receipts produced from the land; and 2) on land withdrawn from the public domain, 25 percent of net receipts and basic payment, in lieu of taxes on public lands. Amendments to the act authorized appropriations to make up any difference between the amount in the Revenue Sharing Fund and the amount scheduled for payment in any year. Counties are also required to pass payments along to other units of local government within the county which suffer losses in revenues due to the establishment of Service areas.

Refuge Trespass Act of 1948 (18 U.S.C. 41): This consolidated penalty provisions of various acts from 1905 through 1934, establishing and protecting fish and wildlife areas, and restated the intent of Congress to protect all wildlife within Federal sanctuaries, refuges, fish hatcheries and breeding grounds.

Rehabilitation Act (1973): Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

Rivers and Harbors Act (1899; 33 U.S.C. 403): Section 10 of this act requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States.

Secretarial Order No. 3226; Evaluating Climate Change Impacts in Management Planning (2001): Directs each Department of the Interior bureau to consider and analyze potential climate change impacts when undertaking long-range planning efforts or multi-year management plans.

Transportation Equity Act for the 21st Century (TEA-21); 23 U.S.C., as amended: In part, this established the Refuge Roads Program and requires that all projects funded under the Refuge Roads Program be consistent with the Service's CCP plans and step-down management plans.

Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948 (16 U.S.C. 667b-d), as amended: This act provides that, upon a determination by the administrator of the General Services Administration, real property no longer needed by a Federal agency can be transferred without reimbursement to the Secretary of the Interior if the land has particular value for migratory birds, or to a State agency for other wildlife conservation purposes.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. 4601 et seq.), as amended: Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the Service. The act requires that any purchase offer be no less than the fair market value of the property.

Waterfowl Depredations Prevention Act (1956; 7 U.S.C. 442-445), as amended: This act authorizes the Secretary of the Interior to use surplus grain owned by Commodity Credit Corporation to feed waterfowl to prevent crop damage. Findings regarding possible crop damage are to be made by the Secretary of the Interior, and grain is to be used to lure waterfowl away from crops, while not exposing them to shooting over areas to which they have been lured. Such grain may be made available to Federal, State, or local governments or private organizations or individuals. Appropriations are authorized to reimburse Commodity Credit Corporation for packaging and transporting such grain.

Water Resources Planning Act (1965), as amended: This established a Water Resources Council to be composed of Cabinet representatives, including the Secretary of the Interior. The council was empowered to maintain a continuing assessment of the adequacy of water supplies in each region of the U.S. In addition, the council was mandated to establish principles and standards for Federal participants in the preparation of river basin plans and in evaluating Federal water projects. Upon receipt of a river basin plan, the council was required to review the plan with respect to agricultural, urban, energy, industrial, recreational, and fish and wildlife needs. This also established a grant program to assist states in participating in the development of related comprehensive water and land use plans.

Wetlands Reserve Program: The Wetlands Reserve Program (WRP) is a voluntary program. It provides technical and financial assistance to eligible landowners to address wetland, wildlife habitat, soil, water, and related natural resource concerns on private lands in an environmentally beneficial and cost-effective manner. The program provides an opportunity for landowners to receive financial incentives to restore, protect, and enhance wetlands in exchange for retiring marginal land from agriculture. There are three enrollment options for landowners: 1) permanent easement, 2) a 30-year easement, and 3) a restoration cost-share agreement. The WRP was re-authorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill). The Natural Resources Conservation Service administers the program (*See Also: Food Security Act of 1985*).

Wilderness Act of 1964 (16 U.S.C. 1131): The purpose of this act is to preserve and protect wild lands in their natural condition *"...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness."* This directed Federal agencies such as the U.S. Fish and Wildlife Service to survey their roadless lands for possible wilderness designation. Wilderness areas are protected from development and the operation of motorized equipment. A Wilderness Area is defined as an area with at least 5,000 acres of undisturbed, undeveloped land affected by the forces of nature and may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Wildlife-dependent Recreation, General Guidelines (Service Manual 605 FW1): This provides Service policies, strategies, and requirements concerning the management of wildlife-dependent recreation programs within the Refuge System *(See also Section 3.10 of this CCP)*. Subsequent chapters (e.g., Service Manual 605 FW2 - Hunting and Service Manual 605 FW3 - Fishing) outline specific Service policy on these priority public uses of the Refuge System.

* *U.S. Fish and Wildlife Service policies are available online at: http://www.fws.gov/policy/*

G. Intra-Service Section 7 (Endangered Species) Consultation

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

[Note: This form provides the outline of information needed for intra-Service consultation. If additional space is needed, attach additional sheets, or set up this form to accommodate your responses.]

Originating Person: Manuel Perez III, Refuge Manager
Telephone Number: 956-748-3607
Date: August 3, 2009
Cons. # 21410-2009-I-0320

I. **Region:** Southwest

II. **Service Activity (Program):** Implementation of a Comprehensive Conservation Plan (CCP) for Laguna Atascosa National Wildlife Refuge (Refuge), National Wildlife Refuge System.

III. **Pertinent Species and Habitat:**

A. Listed species and/or their critical habitat within the action area:

Laguna Atascosa NWR—Cameron and Willacy Counties

Ocelot – Dense thornbrush habitats including on lomas and along resacas
Jaguarundi – Dense thornbrush and cordgrass habitats
Northern Aplomado Falcon - Coastal prairie
Piping Plover with Critical Habitat (CH), 74 FR 23475-23600 – Beaches, tidal flats, washovers, and marshes
Brown Pelican - Gulf and bay waters and beaches
Sea Turtles (five species) - Gulf and bay waters

B. Proposed species and/or proposed critical habitat within the action area:

None

C. Candidate species within the action area:

None

D. Include species/habitat occurrence on a map: See attached map.

IV. **Geographic area or station name and action:** Laguna Atascosa NWR, Rio Hondo, Texas; Comprehensive Conservation Plan Implementation.

V. Location (attach map): See attached draft CCP

A. County and state: Cameron and Willacy Counties, Texas

B. Latitude and longitude: Laguna Atascosa NWR Headquarters: N 26 13' 42" and W 97 20' 54"

C. Distance (miles) and direction to nearest town: About 18 miles east of Rio Hondo, TX (Refuge Headquarters)

VI. Description of proposed action:

The proposed action is to implement the Comprehensive Conservation Plan (CCP) for Laguna Atascosa NWR over the next 15 years. The CCP is divided into a series of goals, objectives, and strategies that will be implemented throughout the 15-year term of this plan. Specific goals associated with the CCP are to: 1) to protect, conserve, and manage for native wildlife such as endangered species, other Federal trust species, and priority species with an emphasis on Refuge focal species; 2) to protect, restore, enhance, and maintain the ecological integrity and diversity of native habitats with an emphasis on wetlands, brushlands, coastal prairies, and barrier island habitats within the Gulf Coast Ecosystem, while controlling the spread of invasive or exotic plants; and 3) to connect people with nature by providing compatible wildlife-dependent recreation, interpretation and environmental education to a diverse audience by offering quality visitor services and facilities with an emphasis on reaching local residents. Implementation of the CCP is consistent with the goals of the Refuge, the Refuge System, and ecosystem and other landscape-level plans and initiatives.

The overall management of the Refuge will focus on protecting and restoring native habitats; protecting and providing habitat for waterfowl, migratory birds, Federally-listed species, and providing increased opportunities for public use, environmental education, and interpretation. Based on an ecosystem approach, the wildlife and habitat goals and objectives focus more on providing viable and healthy habitats whereby wildlife can naturally flourish. For detailed descriptions of CCP goals and proposed actions (objectives and strategies), please refer to Chapter 4 (Management Direction) in the attached draft CCP.

VII. Determination of Effects:

A. Explanation of effects of the action on species and critical habitat in item III A (attach additional pages as needed):

Wildlife and Habitat Actions

Federally-listed species which breed or seasonally utilize the Refuge's habitats are the ocelot, jaguarundi, northern aplomado falcon, brown pelican, piping plover, and sea turtles (i.e., Kemp's ridley, green, hawksbill, loggerhead, and leatherback sea turtles). Specific activities of the CCP which may affect these listed species include:

prescribed burning, native brush restoration, maintaining and restoring wetlands for waterfowl and other waterbirds, and invasive species management. Invasive species management includes direct control of feral hogs (*Sus scrofa*) and nilgai antelope (*Boselaphus tragocamelus*) and control treatments of invasive plants such as guineagrass (*Panicum maximum*), buffelgrass (*Pennisetum ciliare*), saltcedar (*Tamarix spp.*), and Brazilian peppertree (*Schinus terebinthifolius*), using prescribed fire and chemical and mechanical treatments. Feral hogs are an invasive species found on the Refuge that damage fragile wetland resources and are predators to native wildlife. Nilgai antelope, a native of India and Pakistan, are an exotic species on the Refuge. Their populations have increased recently and they compete with native species such as white-tailed deer for food. Both of these species require aggressive and continuing control efforts such as public hunts, hog trapping, and selective shooting. For more information on CCP objectives and strategies related to all proposed habitat management activities, please see Goal 2 in Chapter 4 of the CCP.

With respect to the ocelot, the CCP proposes several objectives to help meet recovery plan goals for downlisting from endangered to threatened status. For the most part, these objectives follow with established recovery plans, both current and future. The six priority recovery actions proposed in the CCP for the Refuge are: 1) addressing the potentially deleterious effects of small population size, population isolation, and loss of genetic diversity in the Cameron County ocelot population; 2) protecting existing ocelot habitat and minimizing habitat loss on and in the vicinity of the Refuge; 3) restoring, connecting, and increasing the availability of ocelot habitat; 4) continuing the long-term monitoring and research of ocelots; 5) increasing water availability during times of drought; and 6) reducing the risk of ocelot road mortalities. Some of the specific strategies in the CCP for ocelot conservation include the establishment of several wildlife corridors to connect ocelot populations and various Refuge tracts. In addition, there are efforts proposed to translocate ocelots or "genetic material" from the State of Tamaulipas, Mexico to address the genetic diversity issues of ocelot populations in the U.S. Please see Wildlife Objectives 1 and 2 and Habitat Objectives 1, 4, and 7 in Chapter 4 of the CCP for more detail on proposed actions affecting this species.

The endangered jaguarundi has not been verified in South Texas in more than 20 years. The last verified specimen was a road-killed individual in Cameron County in 1986, along State Highway 4, just east of Keller's corner (intersection of FM 1419 and State Highway 4). Since then, there have been numerous unconfirmed sightings in or near the Refuge and at Sabal Palm Grove Sanctuary, near Brownsville. The CCP proposes to determine the status of the jaguarundi by investigating all credible jaguarundi reports and to conduct trapping and surveillance on the Refuge specifically for jaguarundi, based on trapping information gained in Mexico. Trapped cats may be radio-collared (similar to ocelots) to determine habitat use, movements, and reproduction. Please see Wildlife Objective 3 in the CCP for more specific details.

With respect to sea turtles, the Refuge contributes to recovery plan tasks primarily through monitoring nesting and stranding, patrolling beaches, moving eggs to protected corrals, participating in recovery work groups, and partnering with organizations and agencies such as Sea Turtle, Inc., and Padre Island National Seashore. Nest monitoring includes all-terrain vehicle (ATV) beach patrols on the

South Padre Island Unit from April though July, which corresponds with the primary nesting season of the Kemp's ridley. The Refuge participates in the Sea Turtle Stranding and Salvage Network, as recommended in recovery plans. The CCP proposes to continue protection of nesting sea turtles through patrols and moving eggs to a protective corral and to use sea turtle hatchling releases as public outreach events to raise awareness of sea turtle conservation efforts and the importance of the Refuge to these efforts. The CCP proposes to investigate and identify sea turtle nesting "hotspots" during sea turtle monitoring to designate these areas for special protection. These areas would be protected through seasonal closures, if feasible, with posted signs; increased patrols of these areas; and by posting public informational signs to encourage reporting of nesting sea turtles in these areas.

With respect to the northern aplomado falcon, releases of aplomado falcons on the Refuge were conducted from 1993 up until 2003. Today, aplomado falcons nest on the Refuge (Laguna Atascosa, Coastal Corridor, and Bahia Grande units) and will continue to be monitored on Laguna Atascosa NWR, as part of this CCP. Specific actions proposed in the CCP are to partner with others such as The Peregrine Fund to monitor the population and protect nesting areas. Please see Wildlife Objective 6 in Chapter 4 of the CCP.

Piping plovers primarily occur on the beaches and bays on the Refuge from mid-September through mid-March. The piping plover typically occurs on South Padre Island along the beaches or washover areas, but also occurs on the Laguna Atascosa and Bahia Grande Units. The CCP proposes protective measures that include limiting public uses to designated areas and seasons to avoid disturbing piping plovers as well as other sensitive shorebirds by: 1) identifying and marking beach-to-bay access routes for off-road vehicles; and 2) reducing human disturbance and adverse impacts to plover habitats. This will be accomplished through increased law enforcement patrols, additional signage, educational outreach, and partnerships consistent with the Texas Open Beaches Act (beachfront habitat).

The brown pelican occurs on South Padre Island and in the bay waters and marshes of the Lower Laguna Madre coastline. The CCP includes general objectives and strategies to protect this species from disturbance and harm. The Refuge will support management and conservation actions, as described in other federal or state plans for this species (e.g., recovery plans, Texas Comprehensive Wildlife Conservation Strategy).

For additional information on CCP objectives and strategies related to all activities that may potentially affect federally-listed species on or near the Refuge, please see all objectives and strategies within Chapter 4 of the CCP.

Wildlife-dependent Recreational Actions

The CCP proposes improving hunting and fishing opportunities. For example, under hunting and fishing opportunities, the CCP proposes to evaluate the compatibility of developing a hunt program on the Bahia Grande Unit and to determine the compatibility of allowing seasonal wade fishing access (e.g., Memorial Day to Labor Day) to the Laguna Madre from the Bayside Wildlife Drive in Management Unit 7, including any additional infrastructure (e.g., parking areas and access points). The

CCP also proposes providing guided canoe/kayak tours on the Laguna Atascosa and Bahia Grande Units, improving outreach, and establishing additional partnerships.

Infrastructure and Public Access Actions

The CCP proposes to improve visitor use facilities and infrastructure. For example, approximately six miles of hike/bike trails, an auto tour route, a visitor contact station, and two parking areas are proposed for the Bahia Grande Unit. In addition, a new visitor center is envisioned near the Laguna Atascosa Unit headquarters area.

B. Explanation of actions to be implemented to reduce adverse effects:

All proposed actions outlined above and described in the CCP which may affect listed species will be individually submitted to the Corpus Christi Ecological Services Field Office (ESFO) for compliance with the Endangered Species Act. As a working document, modifications to the objectives and strategies are anticipated. If modifications result in changes to the effects analysis, or include actions that are not considered in this document, the Refuge will re-initiate consultation or consult with the Corpus Christi ESFO over any proposed actions that may affect federally-listed species and/or critical habitat.

VIII. Effect determination and response requested: [* = optional]

A. Listed species/designated critical habitat:

Determination	Response Requested
No effect on species/critical habitat (species: none)	_____*Concurrence
May affect, is not likely to adversely affect species /critical habitat (species: Ocelot, Jaguarundi, Northern Aplomado Falcon, Brown Pelican, Piping Plover w/CH, and Kemp's ridley, Green, Loggerhead, Hawksbill, Leatherback Sea Turtles)	__X__Concurrence
May affect, is likely to adversely affect species /critical habitat (species: n/a)	_____Formal Consultation

B. Proposed species/proposed critical habitat:

Determination	Response Requested
No effect on proposed species/critical habitat (species: none)	_____*Concurrence
Is not likely to jeopardize proposed species/ adversely modify proposed critical habitat (species: n/a)	_____ Concurrence
Is likely to jeopardize proposed species/ adversely modify proposed critical habitat (species: n/a)	_____ Conference

C. Candidate species:

Determination	Response Requested
No effect on candidate species (species: none)	_____*Concurrence
Is not likely to jeopardize candidate species (species: n/a)	_____ Concurrence
Is likely to jeopardize candidate species (species: n/a)	_____Conference

/s/ Manuel Perez III **8/3/2009**

Signature Date

[Title/office of supervisor at originating office]

IX. Reviewing ESFO Evaluations:

A. Concurrence: X Nonconcurrence: _____

B. Formal consultation required: _____

C. Conference required _____

D. Informal conference required _____

E. Remarks (attach additional pages as needed):

S. Dawn Whitehead — 9-1-09

Acting Field Supervisor

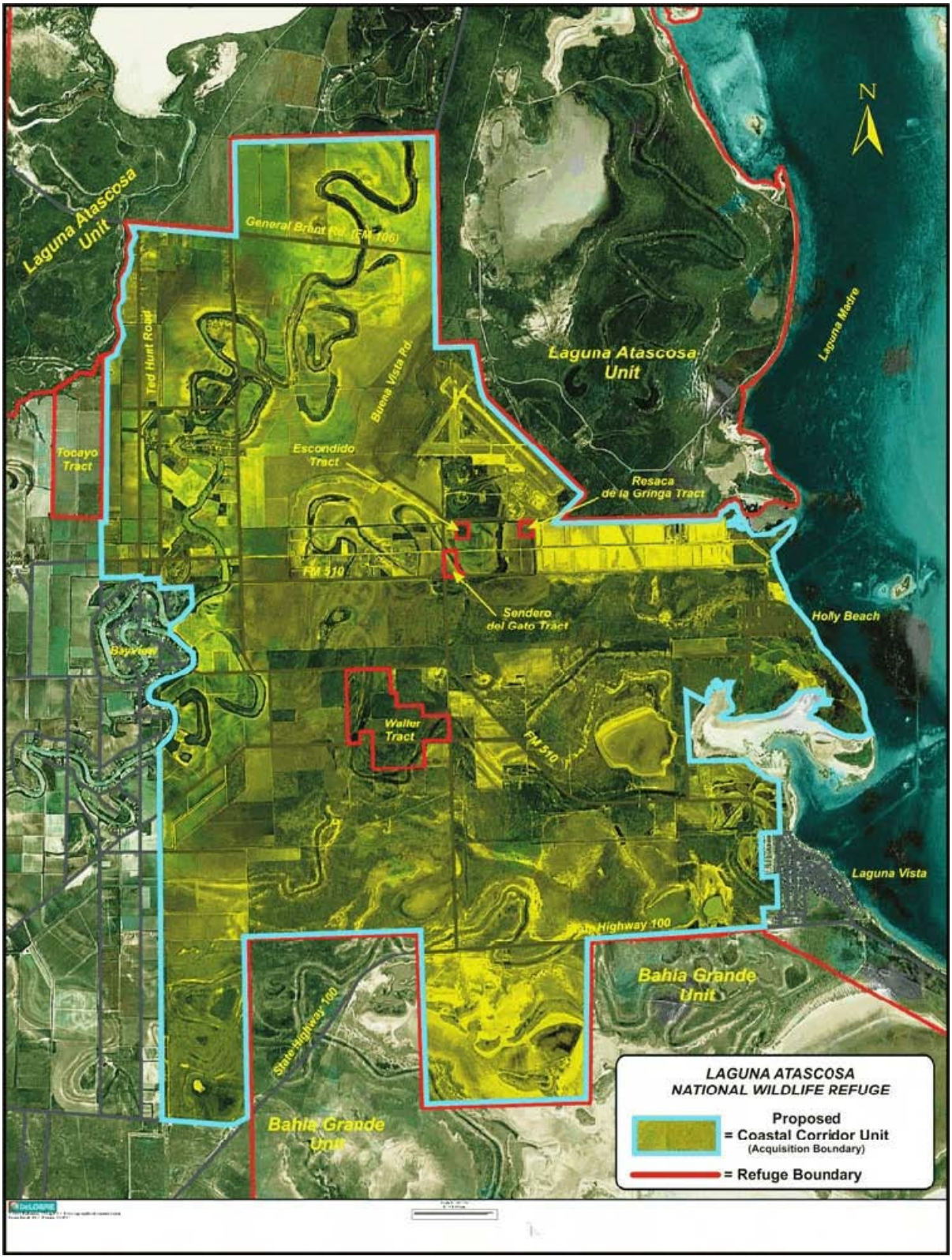
Signature — Date

[Title/office of reviewing official]

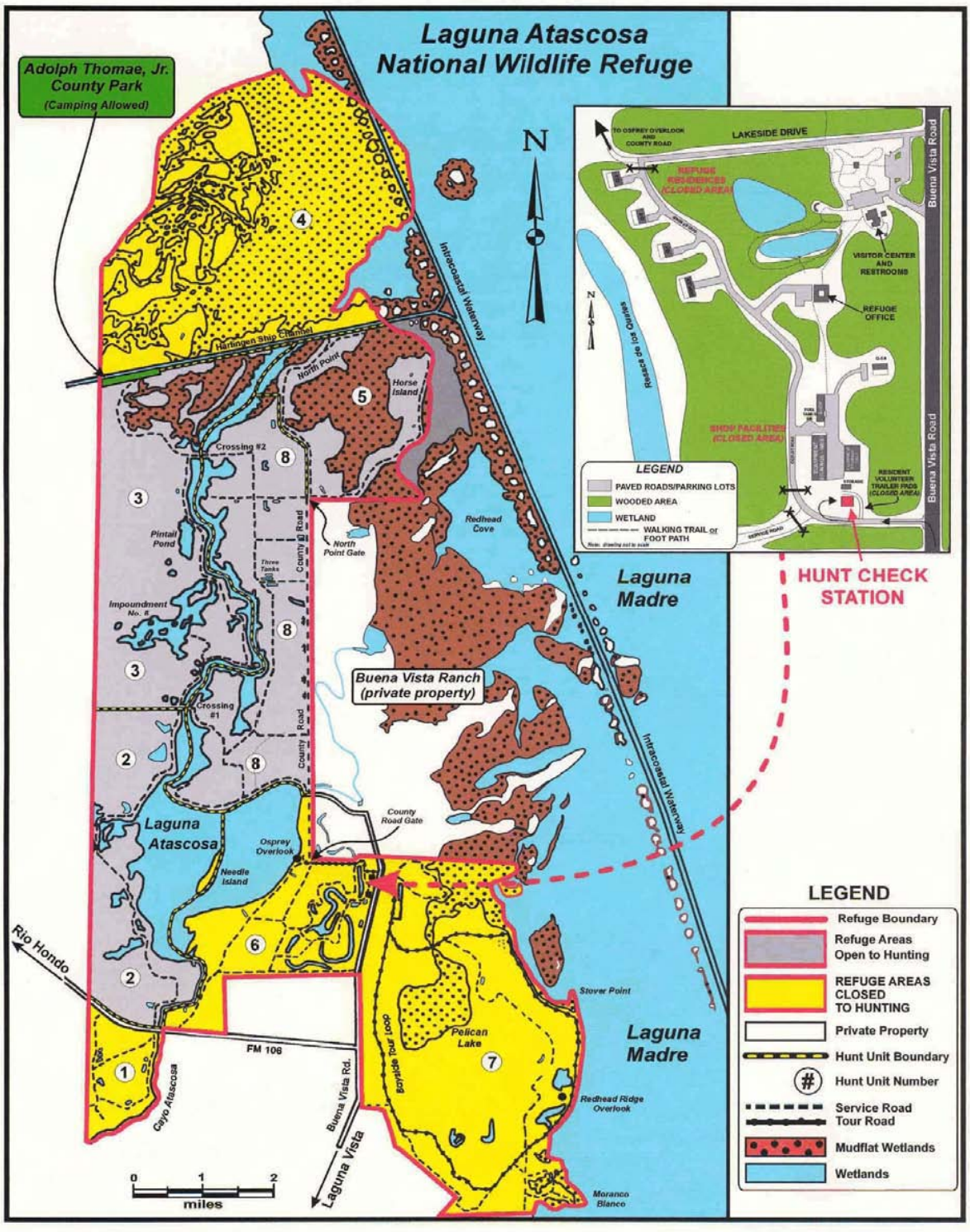
H. Public Involvement – Response to Comments

(To be added)

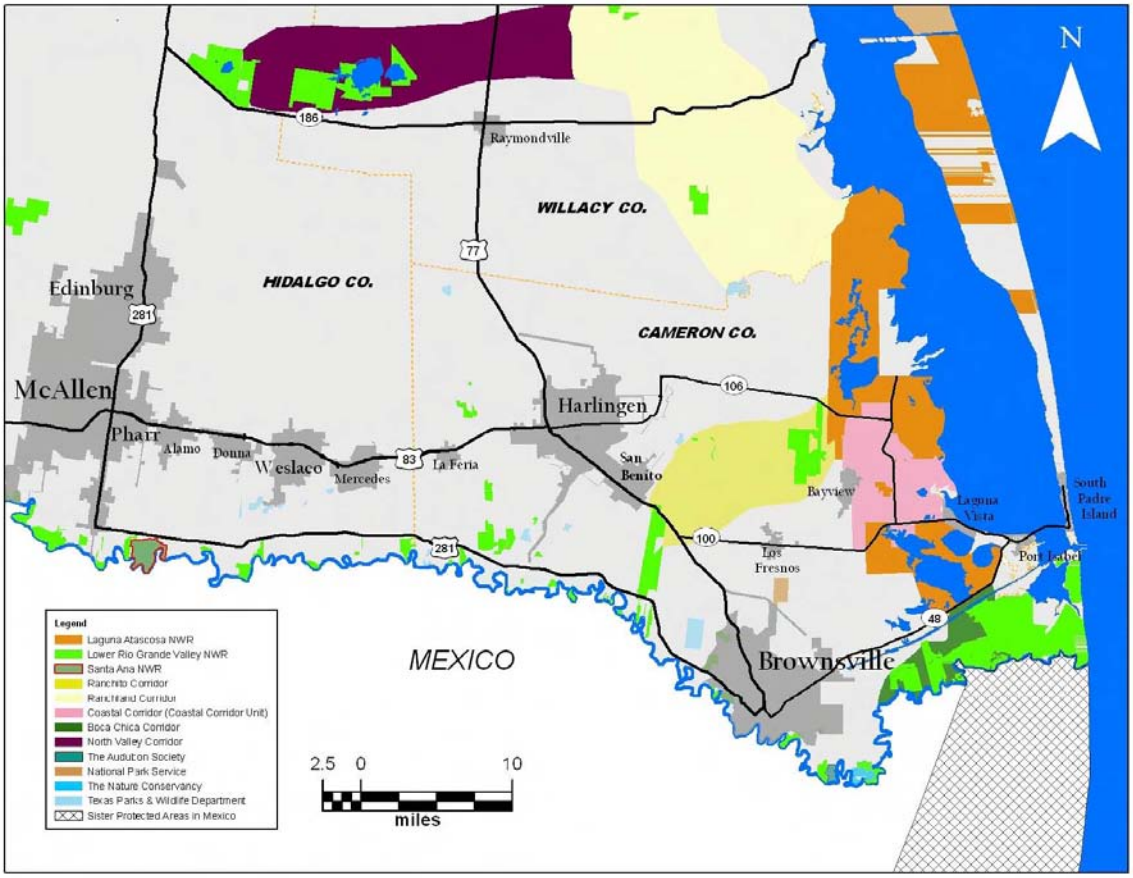
I. Refuge Maps



Coastal Corridor Unit Area Map



Refuge Hunt Map



Wildlife Conservation Corridors

U.S. Fish & Wildlife Service
National Wildlife Refuge System
Division of Planning
P.O. Box 1306
Albuquerque, NM 87103
505/248-7411
http://www.fws.gov/southwest/

Laguna Atascosa National Wildlife Refuge
22817 Ocelot Road
Los Fresnos, TX 78566
956/748-3607

http://www.fws.gov/southwest/refuges/texas/STRC/laguna/Index_Laguna.html

Ocelot
Photograph by Larry Ditto

October 2009